EATING
To Live Long

William Henry Porter M.D.

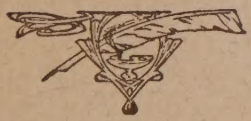
04/25
STRAND PRICE
$5.00

Eating to Live Long

Eating to Live Long

By
William Henry Porter, M. D.

With an Introduction
by
Edwin F. Bowers, M. D.



Chicago
The Reilly & Lee Co.

Copyright, 1920
by
The Reilly & Lee Co.

All Rights Reserved

Made in U. S. A.

Second Edition, 1920

Eating to Live Long

The Following Pages
Are Dedicated to
My Wife,
Margaret Josephine Carroll Porter,
As a Token of Respect
And Affection.

CONTENTS

CHAPTER		PAGE
1	THE WHY AND THE HOW OF FOOD. Dwarfs, giants, Eskimos—and their food. The balanced ration. Vegetarianism. "Backward children" merely brain-starved. Why eating pays the eater. Hay no food for a scientist. Health foods as fodder.	21
2	TURNING FOOD INTO FUEL AND REPAIR STUFF. How food ignorance builds ill-health. Get rid of the debris. Only 2.8% of beef lost in digestion, against 80% of oat protein. Why fats are essential.	33
3	GETTING RID OF THE ASH AND CLINKER. Food toxins, constipation, and lowered vitality. What bile does. Water, the indispensible.	44
4	STARVING ON A ONE-SIDED DIET. Mineral salts, colloids, and vitamines. Mere food not enough to nourish. The lesson of the Kronprintz Wilhelm. Wasting the most useful food elements.	52
5	MINERAL SALTS AND VITAMINES. Polished rice and dead pigeons. Dr. McCollum and the white rats. The fisherman's neuritis. Yeast a necessary food form.	61
6	FOOD FADS AND FOOLISHNESS. The fasting fallacy. Fletcherism a delusion. When to drink. Making digestion earn its way.	73
7	THE FALLACY OF THE CALORIE. The scientific restauranteur. Diet-kitchen bosh. The calorie merely a measuring stick.	92
8	FOODS THAT POISON. Why some can't eat milk, eggs, and cheese. The baneфulness of beans. Nuts excellent squirrel food. Strawberries, shellfish, and skin eruptions.	103
9	HOW UNDER-NUTRITION INVITES DISEASE. Tuberculosis from lack of food. The responsibility of parents. Why mothers should be well-fed. Feeding children into health.	113
10	THE CRIMES OF COOKS. White flour a tooth and nerve destroyer. "Sinkers," boiled vegetables, and other culinary offenses.	122
11	THE EVIL OF FRUIT. Poisoned by fruit acid. Fermentation not a natural laxative process. Fruit-eating, uric acid, auto-intoxication and Bright's Disease.	128

CHAPTER PAGE

12 Sweets as Life Shorteners....138
Why we are better off without sugar. Sugar a heat and poison producer. Cut down on potatoes.

13 The Ideal Diet....146
Don't encourage fermentation. Food combinations that develop toxins. How to use milk.

14 The Demented Diet of a Business Woman....159
Anemia, pimply complexions, constipation, neurasthenia, and chocolate eclairs. Stimulating sexual vitality. Clearing the brain with food.

15 Getting Thin by Eating....165
Obesity and deficient lung power. Baths, massage, and mineral salts. Normal weight a matter of proper food balance. What to avoid.

16 Some Neglected Foods....179
Conserving the discarded. Dehydration a conservation solution. Stabilizing the vegetable crop.

17 Uric Acid—What It Means....190
Meat-eating not a cause for uric acid. Getting rid of the excess. Harmful and harmless varieties of uric acid.

18 Fighting Rheumatism with Food....202
How proper meat-eating cures rheumatism. Taboo sweets and starchy vegetables. Eliminating end-products.

19 Does Meat-eating Cause Cancer?....209
Easy to over-eat of meat. But over-indulgence in foods that don't let meat digest actual cause of irritation.

20 Fertile Soil, Improper Food and Germs....215
How wrong food paves the way for disease. Lowered vitality an invitation to a microbe.

21 What Is the True Status of Alcohol?....220
Alcohol, rightly used, a life-saver. A food tonic for the aged and debilitated. How alcohol overcomes toxemia.

22 Curing Disease by Diet....229
Food the most important of all medicines. Milk not complete food. Use vegetables only in moderation. Prevention of under-oxidation keynote to disease cure.

Comparative Table of Foodstuffs....244
Menus for Twenty-one Meals....247
Notes on Menus....251
Appendix....253

PREFACE

Man is an organism built around a food-tube. All man is, all he ever has been, has had its original motif in his need for food, and in the means he has evolved in order to secure it.

History itself, in the main, is merely a series of accounts of how certain peoples pushed certain other peoples out of the way, in order to avail themselves of the others' food supply, or of their potential sources of food.

Ethnologists and students of anthropology also tell us that by far the most important determining factor in racial development is the character of food upon which any people has lived. It has governed their stature, their intelligence, or lack of intelligence, their disposition.

Upon whether a race is well or poorly nourished depends its status as conquerors, questing, energetic, civilization-making; or as docile serfs, blood-brothers to the cabbages, manioc, or rice they cultivate.

Upon the difficulty of securing an adequate

supply of balanced nutriment depends also their cultural development; for, if the aim and end of existence revolves around a grubbing of arid acres, it is obvious that not much energy can remain for speculative and creative endeavor.

However, it is with the physiological aspects of food, as they concern the individual, that our attention is now engaged. In this connection, one might rather expect that in the half million or more years in which human beings have been inhabiting this planet, they would have developed an ample and adequate understanding of the uses of food, or an instinctive if not an acquired knowledge of proper food selection.

Such is not the case. Even the greatest scholars have shown, and still show, a lamentable ignorance of food and its functions. The sour and crabbed Carlyle is a horrible example of this ignorance. Living for years, as he did, upon oatmeal — one of the poorest sources of nutriment a human could ever put into his stomach — Carlyle exhibited, all his life, the results of chronic intestinal auto-intoxication, plus a distressing unappreciation of food value; while Herbert Spencer, with all his vast wealth of information, did not

know enough to select a regimen that would have lifted him out of the slough of chronic dyspepsia. The great Napoleon, for all his genius, proved himself the victim of his own gastronomic sins; for if he had taken time properly to masticate and insalivate his food, instead of making good his brag that he never spent more than ten minutes at a meal, he might have segregated England, instead of being segregated at St. Helena.

What is even more surprising, however, is that many medical men, among them men who have won an enviable reputation as physiologists and clinicians, are almost equally at sea respecting the uses and the proper selection of food. So conflicting has been their experiences, so confusing their findings, that hardly any two modern authorities agree upon even the fundamentals of the science of nutrition.

The result has been that the laity, who look to medical men for authoritative advice on the subject of diet, have been, and more than ever now are, the prey of charlatans and sophisticated commercial adventurers, who force upon them, willy nilly, whatever fads or fancies of diet yield the fattest sources of profit.

As a consequence, the vitality of the race has suffered. Millions have been robbed of

red blood and the mineral salts so necessary to the building of better brains and bodies. The white spectre of tuberculosis has stalked among them unabashed. Devastating epidemics have flamed through them like a holocaust. Diseases having their indubitable origin in malnutrition and poor metabolism are crippling them with rheumatism, arterio-sclerosis and kidney degeneration.

Food, which should nourish and sustain them, has become either a mess of devitalized, innutritious husks, or else an actual source of poison; and all because we have been ill-advised, because we have developed false appetites for faulty combinations of food, and because we have been led into a jungle of misconception respecting dietary needs.

So, I say, the question of proper nutrition is the most important problem that confronts the race today. Upon its solution depends the health, well-being, and physical and mental efficiency of men and women.

If it is true, as I confidently believe, that ninety per cent of all human ailments, apart from disorders incident to old age, or acute infections, are due to wrong combinations and foolish selection of food, then it must necessarily follow that the health, longevity and

happiness of the race would be incalculably enhanced if we were rightly to understand and consistently to follow a regimen calculated to prevent further poisoning.

It is my purpose in this book to indicate this regimen, and to suggest the means whereby present poisoning may be overcome and future poisoning prevented.

In connection with the preparation of this manuscript I have especially to thank Dr. Edwin F. Bowers, who has made the production of this book possible. He has gone through all that I have written during the past forty years, culled out and brought into alignment all the material necessary to perfect these chapters.

Thanks are extended, also, to my friends and co-workers, Doctors Samuel Lloyd and Henry T. Brooks, for reading over the manuscript, making corrections, suggestions and additions which have greatly enhanced the value of the work.

Furthermore, sincere thanks and appreciation are extended to Doctors Robert T. Morris, Henry O. Marcy, Thomas E. Satterthwaite, Frank Billings, Reynold Webb Wilcox, Samuel Lloyd, Henry T. Brooks, William A. Dayton, Claude I. Steensen and

Benjamin T. Whitmore for the highly commendatory forewords they have written for the book in advance of its publication. They have expressed far more than I ever expected could be said regarding the work.

To my publishers, Reilly & Lee, also I extend my sincere thanks for the handsome edition they have produced. I am sure this sentiment will be fully endorsed by every one who reads these pages. The size of the type, and the full interspacing, make perusal exceptionally easy for tired, over-worked eyes of busy humans these rushing days.

WILLIAM HENRY PORTER, M. D.

INTRODUCTION

Nearly seventeen years ago a member of my family developed what several of the most eminent specialists in the East call interstitial nephritis — a form of Bright's disease.

She was anemic and emaciated. The second sound of the heart was accentuated. For months she had passed large quantities of a low specific gravity urine — 1005 to 1015 — with albumin, hyaline casts, and other kidney debris. There was also a slight tubercular involvement at the apex of the right lung.

In spite of, or perhaps because of, a milk, fruit, and "low-protein" diet, and what we fondly and foolishly believed was the best available treatment, she grew weaker, the prognosis became more and more unfavorable.

Then le Bon Dieu, or else the long arm of coincidence, brought me into contact with Professor Porter, at that time Professor of Medicine and Pathology at the Post Graduate Medical School and Hospital of New York.

Dr. Porter was, and is, a radical, hewing

out for himself, and for the world, innovations in medical treatment and in dietetics. One of these innovations had to do with the significance of the presence of indican in the urine.

Dr. Porter contends, and this is now generally accepted by really advanced medical men, that when a person has an excessive amount of indican in the urine, the thing from which this person is primarily suffering is autointoxication from the absorption of putrefying intestinal products.

Also, that it does not matter particularly just *how* this self-poisoning expresses itelf, whether in "neurasthenia," rheumatism, nephritis, tuberculosis, anemia, or in a predisposition to infectious diseases; the thing to do, and without delay, is to correct the depraved digestive and metabolic processes responsible for the pathological condition, whatever this may be.

This was done in the twenty year ago case of "interstitial nephritis," for the urine, on examination, was found to be loaded with indican, and the ratio of urea and uric acid was decidedly unbalanced. Dr. Porter pronounced this a case of intestinal indigestion primarily, complicated with all the hundred

and one troubles that accompany this most common of all modern disorders.

The albumin and casts were present in the urine merely because of mechanical irritation of the kidney cells, due to the action of these putrefactive poisons and their toxic products.

All that Dr. Porter did was to correct the intestinal indigestion, by means that will be fuliy explained in these pages, clear up the putrefactive fermentation in the bowels, and prevent the formation of more indican. In a short time the albumin and casts disappeared, the general nutrition improved, and the patient got well of everything, and has remained so all these years.

The means Dr. Porter adopted for bringing about these results were so contradictory to all accepted teachings that they seemed absurd. In fact, they are so revolutionary that it is doubtful if even today, except among those physicians who have had the privilege of studying under Dr. Porter, there are five hundred medical men in the United States who would endorse them.

The idea of keeping fruit away from sick people, and, for the matter of that, from well people also! And cutting the mild-eyed potato out of the dietary! And putting candy and

sweets in the Index Expurgatorius! And of giving red meats in kidney diseases!

It *does* seem absurd. But it "works." Scores of times I have seen the thing proved out, sometimes in very desperate conditions. So I *know* there can be no question of doubt as to the logic and the efficacy of Dr. Porter's methods.

Bright's disease, even in well-advanced stages, clears up. Rheumatism and all the thousand and one symptoms of "neurasthenia" are relieved. Tuberculosis, and all sorts and conditions of chronic disease, due to the improper conversion and oxidation of food, fold their dog tents and hie them to more favorable breeding grounds.

Only a few years ago, I, myself, had an experience with Dr. Porter's diet and treatment that served to make me even more enthusiastic about it than I ever had been before. I pass the information along to a few million more middle-aged men who are working at top speed, as I was, and am.

When Dr. Porter put the brakes on me I was running a blood pressure of 180, with a fair amount of albumin and numerous hyaline casts in the urine.

I followed the diet and the medication here

outlined, and in three months my blood pressure was reduced to 125 — where it has since remained — and for forty-eight years old that's pretty good, and the casts and albumin have entirely cleared up. This treatment any intelligent person can follow for himself.

So I believe, honestly and conscientiously, that Dr. William H. Porter is one of the foremost medical men in all the world — a thinker, a deep student, and a physician whom thousands of grateful patients revere. I believe that the value of his scientific discoveries, and the incalculable benefits of these discoveries, will accomplish more for the physical regeneration of humanity than any similar work of modern times.

I believe that every intelligent man and woman who will consistently follow the suggestions Dr. Porter has here outlined, will have ample cause to congratulate themselves three hundred and sixty-five days in every year for the remainder of their lives.

EDWIN F. BOWERS, M. D.

Eating to Live Long

CHAPTER I

THE WHY AND THE HOW OF FOOD

Shakespeare once said: "We are such stuff as dreams are made on; and our little life is rounded with a sleep." This is splendid poetry, but like a lot of other poetry it has in it considerable license and mighty little common sense.

What Are We Made Of?

The real fact is that we are made up entirely of the "stuff" we eat and the water we drink, plus the oxidizing or reducing action of the air we breathe, and the God-given force — whatever that may be — that starts the life processes into motion and keeps them going. So definite is this relation between food and the organism that feeds upon it that, among those whose opinion carries weight, it has become an accepted axiom that the organism itself is a very excellent index of the quality and quantity of material that has entered into the nourishment of that organism.

Tell Me What You Eat and I'll Tell You What You Are

One need not be a professional farmer to know that if a plant is supplied with plenty of manure, from which it can extract the nitrogen necessary for its growth, this plant will grow to twice the height and develop twice the food value of that of a plant deprived of fertilizer. This is especially true if phosphorus also is added as a fertilizing agent.

The same nutritional need is observed also in all animals raised for food purposes, or any other purpose. Man, who is merely a rather refined — in some cases not very refined — type of animal, is subject to identically the same law of growth.

When the nourishment is poor and scanty, man is stunted, mentally and physically. His resisting powers are lowered; he falls more readily victim to devastating diseases; and he indubitably has a shorter and a more unhappy existence — provided he has sense enough to appreciate the grim joke Nature is playing on him.

So we eat to build tissue, to acquire and retain the ability to withstand the ceaseless attacks of microörganisms, to develop better brains, and to absorb nutritive salts — prin-

cipally phosphorus and lime — lacking which, life cannot be adequately sustained.

In addition to these nutritive salts our food also furnishes us with medicine — iodine, iron, and various salts and acids — indispensable to correct functioning of our bodies. So that one who nourishes himself with properly selected foods can maintain such a state of health as to make himself relatively independent of doctors or the drug store.

How We Eat Our Medicine

Not infrequently even the services of the undertaker may be deferred until a much later period.

Racial as well as individual physical and mental characteristics are also developed by diet. For instance, nations nourished on a diet rich in nitrogenous elements — those elements that build tissue — as well as a sufficient quantity of the other food-stuffs necessary to round out a balanced ration, are characteristically well developed. And they look it.

How Food Affects Our Size and Shape

When, however, an exclusive meat diet is depended upon for nutriment, as with the Eskimos, for example, the result usually manifests itself in a stunted, squatty growth.

This hindered growth is not due to the influence of cold, as many claim. For even in tropical Africa there are several tribes of dwarfs, including the Batwa and the Wambuti, who, like the Eskimos, feed almost entirely upon meat. And they are quite as stunted as the Eskimos, or even more so.

The explanation of this lies probably in the fact that in persons living largely upon a meat diet, a definite influence is exerted upon the thyroid and sexual glands, as well as on the pituitary body in the base of the brain — those organs that definitely regulate bodily growth. Certain of these organs influence the metabolism of phosphorus and lime, the chief elements that go to make up the bony structure; for we know that where the development of those organs is abnormally hindered, growth is restricted.

The influence of food upon physical development is cumulative, which also would account for the increased growth in nations that have conquered or bartered their way to a better food supply than others. It accounts also for the stunting and malnutrition apparent among the children of the poor, who have been chronically under-fed from their grandfathers' time down.

If we would thrive, our food must be "balanced." It must contain albumin, as well as starch, sugar and fat. If we get too little animal albumin—that indispensable "building stone" of body cells—the result is a lean and hungry aspect that does not accord well with a physician's idea of pulchritude, however well it may fit the commonly accepted notion of beauty. This explains why the Hindoos, who live chiefly upon rice and millet, are animated demonstrations of the human frame divine. And also why the Japanese, Malays and Chinese—with the exception of the Manchus, who live upon a somewhat richer diet—are usually spare as to flesh and overly prominent as to bone.

Good and Bad Foods, and What They Do

Vegetarians as a class are almost invariably lean, and almost invariably ailing in some respect. This may not arouse volleys of ringing cheers from our vegetarian friends. Nevertheless, I have yet to see a strict vegetarian—not a vegetarian who lives upon milk, eggs, butter, but a real Simon-pure, herbivorous vegetarian—who did not have something the matter with him, even if it was only a chronic grouch.

The Vegetarian Grouch

This inevitably is produced by the inability of the system to oxidize the kind of stuff the vegetarian mistakenly takes as food.

If They Eat Too Much Meat

Every animal tamer knows that in bringing up young animals not entirely carnivorous in nature, the less meat they get, the more docile they become. To a certain extent, this is also true of the human. Yet there is a happy medium between the bovinely placid Chinaman or Hindoo kind of person and the Spartan or Martian disposition brought about in the war-like races by a diet of bloody soups, meat and milk.

However, a proper amount of albumin, which is the most certain of all energizers, is absolutely necessary, either for a conquering race or a conquering man.

Food as Medicine for the Memory

Nor is the effect of a liberal diet more marked upon the body than it is upon the mind. No intelligent person who has noted the results of experiments made upon thousands of under-nourished school children in various schools throughout the country, can have failed to be struck by the marvelous progress made by these little brains after the

bodies and blood that feed them were properly fed.

"Backward" children were found to be merely brain-starved children. The dunce was only a bright boy who hadn't had any breakfast; the incorrigible, a poor little chap who is a victim of the society, or the circumstances, or the neglect that prevents him from getting proper nourishment.

We now know, and we have proved it on a tremendous scale, that it pays, in actual dollars and cents, for the municipality to shorten the school period by anywhere from one to three years, merely by increasing the food supply of its school-children. Food feeds brains as certainly as books, or in some instances, even more certainly.

Rip Van Winkle School Boards

It is to be hoped that the muddle-minded school boards, who comprehend the utility of a thing about seventy-five years after everybody else on earth realizes its application, will take this invaluable object lesson to heart; and that they will make it possible, no matter how, for every school child in this land to put something hot in his stomach before any attempt is made to put something cold in his brain. For a functioning memory

and an empty stomach are incompatibles.

The Hungry Genius

Much sentimental balderdash has been perpetrated concerning the marvelous intellectual and artistic achievements of the garret-grown geniuses, the natural inference being that the more empty the stomach, the more brilliant the evidence of his genius.

The truth of the matter is that the Chattertons and the Ole Bulls achieved their measure of success in spite of and not because of their poverty and parsimony of fare.

Perhaps Carlyle, who was forced almost all his life to live in a chronic condition of semistarvation, might have been another Plato if he had not been perpetually undernourished by oatmeal, and poisoned by the fermentation products of this worst of all so-called "foods."

No Chance to Be Scientific on a Diet of Hay

The great advances of science and invention have been, in the main, achieved by those races or peoples who have consumed a fair amount of albumin. The vegetarian races may have developed wonderfully in contemplative and philosophical pursuits, but the great discoveries in all those fields that advance science, and engineering, and the things

that make modern life worth while, originate among the albumin-consuming—particularly the meat-albumin eating—races. For what is generally ignored or else not understood, even by specialists in dietetics, is the fact that vegetable proteids, owing to their more complex molecular structure, are less easily peptonized in the stomach than the simple molecule of the meat structure. Consequently, the vegetable diet imposes more work on the intestinal ferments. And the more work the digestive organs have to do, the less energy remains for any other kind of work. Witness the cow, for example.

With vegetable foods from fifteen to eighty per cent of the proteid is lost as it passes through the alimentary canal in an undigested state, because of the fact that the proteid molecule, as it is found in the vegetable kingdom, is very difficult to reduce to its simple form, the only form in which the system is capable of utilizing it.

The Animal Proteid Is Already a Simple Molecule

On the other hand the animal proteid has already been reduced from its complex to a simple construction. Therefore, according to the law of isomerism, or simplification of the food unit, it is easily transformed

by the digestive ferments into a readily assimilable form.

Nor is the superiority of the meat-eating races a question of favorable climatic conditions, as many contend. For the climate of Japan and China is approximately the same as the climate of Europe and the United States. Yet, the really ingenious things, such as the great medical discoveries that have enriched the world and lengthened human life, as well as the great discoveries of wholesale killing that impoverish the world and shorten human lives, are evolved by the races whose diet is rich in easily assimilated nitrogen.

It's the Food, Not the Climate

The chief elements of nourishment for nerve and brain—phosphorus and lecithin, or nerve-fat — come largely from meats, fish, eggs and milk. These elements are indispensable for building and maintaining the central nervous system.

We Improve Our Brains by Eating

With a rice and vegetable diet, however, very little of these elements is absorbed, as even the rice, the coating of which contains a fair amount of phosphorus, is usually eaten by most of the Oriental races with the husk removed.

The lack of these essential elements in the diet not only starves the brain and nerve substance, but it also induces grave disorders in the thyroid and other glands which have a profound effect upon the metabolism of lime and phosphorus compounds. These, in turn, cause beri-beri, Basedow's disease, and other grave disorders of the nervous system.

So if we are to supply our body and nerve-cells with foods capable of sustaining a competent functioning condition, we are obliged to provide them with nuclein—rich meat, fish and eggs—so as properly to stimulate the organ which regulates the use of phosphorus in our bodies and brains.

It is also a matter of common knowledge that if we want to keep an individual in a cheerful frame of mind, we must feed him food. He may possibly be kept alive for a while on "health foods" and other fodder; but he will not be nearly so gentle and complacent; and a hungry man is an irritable man.

What Every Woman Knows

Wise women discovered this fact back in the Neanderthal days, and their female descendants today practice the adroit art quite universally. For exactly the same adequate feeding methods that cause a cat to purr will

cause a man to purr. Thus the sum total of human happiness is increased by proper food, and correspondingly decreased by improper food.

CHAPTER II

TURNING FOOD INTO FUEL AND REPAIR STUFF

Every move we make, every thought we think, every infinitesimal sparkle in our glad eyes, uses up a definite amount of energy and destroys a definite, even though microscopic, amount of cell structure. There is only one way in which this loss in energy and substance can be replaced, and that is by converting food into more energy and more cell structure. At first glance this would seem to be simplicity itself, especially in view of the fact that the human race has been practicing feeding for half a million years.

Yet nothing, so far as most experience goes, seems to be more difficult. The trouble, thus far, lies in a basic misconception as to food values as related to digestive processes, together with a ridiculous worship of the Great God Calorie and all his functions and attributes.

Were it not for these misconceptions we probably would have to subsidize old Malthus to lie quiet in his grave while we developed sense enough to cope with the supply and demand problems of human beings and their food.

Building Ill-Health Out of Wrong Food

On the foundation of this general ignorance of food and food values we have built a Colossus to Ill-Health, into the Moloch maws of which we yearly feed millions of valuable lives, and countless millions of hours of inefficiency. For upon the kind of food we eat and the combination of these kinds of food, and upon how thoroughly we get rid of what is not utilized, depends about ninety per cent of our physical well-being.

The fact that we do not know these things accounts for why so many of us are crawling, half dead, between the legs of the Colossus—crippled with "rheumatism," with degenerative diseases of the heart and blood-vessels, or with grave disorders of the digestive apparatus, or of the organs of elimination. Yet the problem is simple enough. It consists merely of giving a completely balanced diet in proper amounts, and of getting rid of the debris.

As to just what constitutes a "balanced diet" there is need of some little figuring, although not as much as one would suppose; at least, not for humans living in this climate and under the forms of civilization with which we happen to be familiar.

What Is a "Balanced Diet"?

The problem is to combine the three great classes of food—water and the inorganic salts; starch, sugar and fat; and the proteid group—so that the salts and proteids, together with the vitamines and enzymes, may properly build and effectively replace waste tissues; while the starch, sugar and fat furnish heat and force without burning out the lining of the physiological boilers or rusting the flues, which is what many of us very effectively now do every time we eat.

All varieties of food are important; but the proteids are the most important, not only for the work they accomplish, but also for the potentialities for harm that are wrapped up in them if their debris—their organic ashes and clinkers—are not removed from the alimentary firebox after their parent forms have done their bit. For the proteids are the undisputed

The Value and Peril of Proteids

champions of the body's poison squad. This does not mean that they should be eliminated or even curtailed, but only that they should be thoroughly digested; and the most certain way to insure their proper digestion is to take them in their most digestible form—meat (preferably beef), eggs and milk.

Only 2.8% of beef is lost in its passage through the alimentary canal; 2.9% of eggs, and 5.7% of milk; as against 80% of the protein of oats, for instance, which passes undigested through the alimentary tube of the sturdy Scot, filling him full of the gases of fermentation the while. The same ease of digestion holds true for all the animal foods, but the three here mentioned are the best for practical utility.

Starches as Acid Generators

Starches and sugars are also important food elements, although not needed in anything like the amounts we have fatuously thought necessary. In fact, the excessive use of these items is the head and front of all food offenses against the citadel of Good Health, either because of the excessive quantity of pathological acids they may generate, or because of their tendency to rob the proteid foods of the oxygen necessary for the

complete conversion and reduction of the proteid "end-products."

Lastly, fats are essential up to the limit of the ability of the secretions of the liver and intestinal glands to transform them into a fine emulsion for absorption into the lacteals. This is applicable especially to animal fats, while the vegetable fats are converted by the secretions of the liver and pancreatic glands into glycerine and soap before they are utilized for body needs. These, in conjunction with the bile acids, constitute Nature's natural laxative, without which there is constipation.

How Foods Build and Fuel the Body

The processes by which these various groups of foods are transformed into the material finally used for building and running the body are among the most intricate and complex known to science. The manifold secretions act and react upon one another and upon the food substances that are undergoing the changes necessary to fit them for assimilation and final metabolism.

Do Not Forget That the Stomach Has No Teeth

Reasonably thorough mastication is necessary to enable the saliva to act upon the starches; for the ferment of the saliva, ptyalin, plays a highly important part in the digestion

of starches, converting them into sugar, or maltose, which later is converted into glucose, the form in which it passes through the intestinal wall, and the only form in which starch can be utilized in the body. Of course, the saliva acts also as a lubricant, facilitating swallowing of the food boluses.

Saliva has also another important function; for when it reaches the stomach its alkalinity excites the flow of the gastric secretion. This action is produced according to the common law that alkalies, brought into contact with acid-secreting membranes (such as are the stomach membranes), tend to stimulate the flow of acid secretions; while acids brought into contact with acid-secreting membranes tend to decrease the flow of the acid secretion. The reverse of this law is true of the alkaline-secreting membranes.

How Alkaline Saliva Excites the Secretion of Acid Gastric Juices

So if we wish to maintain a reverent care for our digestions, our food should be thoroughly masticated, and in as dry a state as is compatible with comfort and the discriminating sense of taste; for only by this means is the largest amount of alkaline saliva se-

No Bolting and No Washing-Down

creted, and this, as we already have seen, is an important factor in exciting the gastric flow.

How the Hydrochloric Acid Works

The next step in the digestive process is produced by the action of the hydrochloric acid in the stomach—that big water-bottle of muscle, the chief function of which is to mix and churn the food into forms which facilitate the digestive processes. The hydrochloric acid, which is the true acid secretion of the gastric juice, attacks all forms of albuminous and nitrogenous compounds, whether derived from vegetable or animal sources, and changes them from their native state into an acid albumin, commonly called syntonin. The reason for this change is that the pepsin can operate best only on an acid albumin. For its perfect action it requires an acid medium. The pepsin produces a gradual and peculiar gelatinization, in which the semisolid syntonin is transformed, first, into what is known as a "pro-peptone," then into albumoses, and finally into a liquid and readily diffused peptone, which is the only form in which albumin is taken up into the body. It is estimated that twenty-five to thirty-five per cent of the substances pep-

tonized in the stomach may be absorbed by the stomach.

It is important to remember, however, that the peptonizing action of the stomach is a slow and comparatively weak process, and as a result only a small portion of the albumin is completely transformed in the stomach into a diffusible peptone.

But the Stomach Acid Does Only Part of the Work

The starches, sugars and fats, practically speaking, are but little affected by the digestive juices of the stomach, although the nitrogenous envelope surrounding the starch granule or the fat globule may be digested away, thus setting free the granulose and the oil. This process has been called "the starch-hydrating and fat-freeing action of the stomach."

After the food has been churned around by the muscular contractions of the walls of the stomach for a sufficient length of time, varying with the character of food taken and the physical character of the individual digesting the food, it is passed through the lower opening of the stomach—the pylorus—into the small intestine, where the really important work of digestion is car-

When the Stomach Gets Through

ried forward. Then, through a most complicated process of action and interaction of the secretions and ferments, such as prosecretin, secretin, prokinase, trypsin, erepsin, and a number of other digestive agents, the digestion of the albumin is carried on to the production of its end-products, the "amino acids."

Meanwhile, the pancreatic ferment, amylopsin, and the secretion of the liver—the bile—are busy with the sugars and starches. They change them into maltose, and get them ready for their final conversion by the intestinal fluids into grape-sugar (dextrose), in which form alone they are capable of being taken up by the system. Here, it is currently taught, they are stored in the liver in the form of glycogen, and subsequently burned in the muscles as fuel. This, however, is contrary to the facts and well-known laws of chemistry.

Glycogen Is Not Stored in the Liver

This theory I believe to be untenable, for the simple reason that, in removing the liver for examination, unless that organ is extracted from the body with lightning-like rapidity, all the glycogen has vanished. It is much more likely that the glucose is con-

verted into various isomeric antecedent products, varying in kind and quality, but ultimately being oxidized directly into carbonic acid and water.

Because glycogen occasionally has been found in the liver, it has been looked upon as a "stored-up" product. Much if not all of the glycogen produced in the system, however, is derived from oxidation reduction of the nitrogenous products — from the albumin. When oxidation is incomplete it passes as glycogen, or some other form of antecedent product, to the kidneys, where it is seized by the kidney cells and discharged in the urine, giving rise to the condition known as glycosuria or diabetes.

Turning Fat Into Food Soap

The fats are acted upon by the pancreatic juice, the bile and certain secretions of the intestinal glands; first, to be changed into a fluid or emulsion, which the steapsin of the pancreas can more readily separate into fatty acids and glycerine. This glycerine is soluble. The fatty acids are acted upon by the sodium bicarbonate and varous alkaline compounds in the intestine, which results in the fatty acids and soda being changed into soap, by the well-known action of alkalies on

fats. So fat merely undergoes a process of subdivision, the fat globules being split into such fineness that the little villi—the fleshy pumps on the inside of the intestinal wall—can pump the emulsified fluid out of the intestinal canal and discharge it into the lymph spaces, from which it is finally carried into the general circulation.

The animal fats are most easily emulsified, hence more easily utilized as heat and energy producers. On the other hand the vegetable fats are more easily split into a fatty acid and glycerine. Hence they are more apt to be laxative in their action.

This, in very sketchy form, is the method by which food-stuff is converted into nutriment and fuel. If the process were a perfect one, and if the debris and the utilized products could be completely burned up, or eliminated through the avenues of excretion, the physician's occupation would be as defunct as was Othello's; but the functions fail of theoretical perfection. Hence the mutability of human existence.

See "Notes Amplifying Chapter II"; Appendix page 253

CHAPTER III

GETTING RID OF THE ASH AND CLINKER

It is a matter of common knowledge that if a fire is to burn freely the furnace must be kept reasonably clear of ashes and clinkers; otherwise the draught is impaired and complete combustion is prevented. It is just the same, or more so, with the human firebox, the alimentary canal. For if this is clogged it not only impedes the functions of digestion and assimilation, but the material that impedes these functions decomposes and forms products that still further hamper, not only the digestive apparatus, but also the nervous system, and every organ and structure in the body.

How Food Toxins Lower Vitality

Accumulation of these waste products in the system is one of the most certain of all means of lowering vitality and the normal resistance to disease; so that innumerable dangerous and even fatal disorders are en-

abled to gain lodgment and find, already prepared, a fertile field for development.

Constipation the Mother of Much Trouble

Perhaps the head and front of all offenses against the body's vulnerability are chronic constipation and the putrefactive fermentation that accompanies it; for the toxic putrefactive products generated by decomposition of food substances in the intestines are absorbed through the intestinal walls into the blood stream, there to depress every function of the body and still further to continue the causes that first developed them.

Bowel surfaces that should be clear for the absorption of food products become caked over with a thick tenacious mucus in which the putrefaction bacteria produce toxic material, from which deadly organic poisons — indol, skatol, indoxyl, and other ptomaines — are derived.

Kidney Disease a Lineal Descendant of the Sluggard Bowel

Kidney troubles, characterized by the voiding of large amounts of low specific-gravity urine, containing albumin and hyaline, granular and waxy casts, also have their origin in intestinal fermentation; for the sluggard bowel, by shifting a considerable portion of its work of elimination upon the

kidneys, overworks these organs. The nephritis that develops is merely an expression of resentment on the part of the kidney against this overwork.

Diabetes, also, is a frequent result of this same grave fundamental cause — the absorption of toxins that paralyze the normal functioning of the gland. These arise, in large measure, from overeating, eating the wrong kinds of food, and from failing to rid the system of the accumulated debris.

The successful treatment of these conditions does not depend so much upon stimulating the action of the liver, kidneys or the pancreas, or in whipping them to do their duty, as it depends upon seeing that the bowels do their full share in sifting out the slag and refuse.

Many diseases that affect the liver develop because that overworked organ has to shoulder the extra burden of neutralizing and filtering out of the blood poisons which never should have been permitted to enter it.

How the Liver Is Abused

Rheumatism, biliousness, an overworked liver — commonly called torpid — congestion and enlargement of the gland, and even grave degenerations of the organ, are a frequent result of this overwork.

Of all the agents tending to rid the system of organic debris, the liver, through the bile, is perhaps the most important, although the laxative effect of fats also has a prominent action. Yet the laxative effect of the fats is dependent upon the quantity and quality of the bile salts and the steapsin; so that, in the final analysis, it is the function of the liver which is of first importance in regulating intestinal peristalsis.

Bile as a Life Saver

For this reason, when bile is defectively produced by the system the addition of new bile is in keeping with the demands of Nature and the principles of strict common sense. This bile can best be supplied by administering dried ox-gall, from two to five grains in capsules, preferably in combination with a few grains of pancreatic extract, three to four times a day, just before eating.

In addition it might also be well to stimulate the bile-secreting activity of the liver by administering from ten to fifteen drops of dilute hydrochloric acid after each meal. Hydrochloric acid, which is the normal stomach acid, is one of the best of all agents for toning up the normal activity of the liver, to say

Hydrochloric Acid the Natural Liver Tonic

nothing of its splendid effects on almost all forms of chronic digestive troubles, especially if these troubles have their origin in a lack of secreting power on the part of the stomach glands, or in a sluggish condition of the liver.

There is hardly anything quite so definite and uniform — unless it be increasing prices and income tax — as the beneficial results of this simple treatment, in combination with the rational regulation of the diet, which will be described in a later chapter.

It should also be remembered that the biliary fluid, once in the alimentary canal, prevents putrefactive decomposition of the intestinal contents and aids in perfecting digestive metabolism. The bile may therefore be looked upon as Nature's chief internal antiseptic, as well as an indispensable digestant. This assertion is sustained by the rapidity with which decomposition in the intestine occurs whenever the secretion of bile is impaired, arrested, or changed in quality.

Bile as an Intestinal Antiseptic

So when the old bile, or bile of poor quality, is expelled from the system and its place taken by new bile of better quality, digestion, assimilation and elimination are immediately improved and nutrition progresses normally.

This is conclusively proved by the fact that the products of nitrogenous oxidation found in the urine are rapidly changed from an excess of uric acid, oxalates, lactates, and urates — even sugar and albumin — into products of normal digestion and oxidation, in normal percentage and quantity.

Water Also Helps to Solve the Problem

Nor must we forget the solvent action of copious water drinking between meals as a powerful aid to removing accumulated ash and clinker from the system. Water, passing as it does almost immediately into the intestinal canal, helps to facilitate removal of the debris from the bowels; first, by rendering their contents more fluid; and second, by the stimulating action it exercises on the peristaltic muscles themselves. It is quite certain that ten or a dozen glasses of cool — not iced — water, drunk daily, would do more to remove digestive troubles, as they affect the American public, than perhaps any other one measure that could be recommended.

Watery Vegetables Also Good Medicine

Watery vegetables also help to increase the quota of water ingested, as well as, by their bulk, furnishing a stimulus to increased bowel action. The valuable salts they contain also fur-

nish indispensable substance for cell nutriment, as well as vital stimuli for certain obscure processes of metabolism.

Exercise, also, is an indispensable aid to proper elimination of the organic clinkers, as it stimulates the normal activity of the liver and its bile-secreting functions, as well as the peristaltic movement of the bowels. Walking, I have found, is the best of all forms of exercise. There is hardly a day, winter or summer, during which I do not walk anywhere from four to ten miles.

How Exercise Shakes Out the Ashes

"Setting up exercises" — squatting, stooping, bending, twisting, stretching — are excellent for those who have the vigor to indulge in them; while swimming, horseback-riding, rowing, gymnastics or, best of all, bicycle riding, have also been proved to have immense value.

Above all things, however, see to it that you get an adequate supply of life-giving oxygen; for it is the oxygen taken into the system through the lungs and carried to every cell in the body by the blood, that consumes — or oxidizes — toxic substances, or else converts them into forms in which their capacity

But Do Not Forget Fresh Air

for mischief is neutralized or entirely removed.

We Do Not See the Obvious Things

All these things are so self-evident that it seems quite impossible they could be so persistently ignored. Yet it is a fact that men and women, many of whom have achieved distinction in business, intellectual or social life, do consistently and persistently ignore them. Which is the chief reason why undertaking remains one of the most profitable professions that wide-awake men can possibly engage in.

CHAPTER IV

STARVING ON A ONE-SIDED DIET

On April 11th, 1915, the converted cruiser *Kronprinz Wilhelm,* after one of the most sensational privateering expeditions in marine warfare, slipped into the James River, off Newport News. Her crew was stricken with a disease which the doctors pronounced beriberi, although they might just as well have called it scurvy, or pellagra, or jail edema, or neuritis, or "trench fever" — all of which manifest similar symptoms.

One hundred and ten of these privateers were incapacitated. All the others were on the verge of a physical breakdown. This was why the commander of the *Kronprinz Wilhelm* took the desperate chance of running into port.

The officers and marines aboard the warvessel had been living on a diet of fresh meat, white bread, soda crackers and fancy cakes, sugar, cheese, eggs, ham, bacon, condensed milk, oatmeal, degerminated corn, oleo, boiled

potatoes and coffee — food that millions of Americans fatuously believe contains all the nutrient material necessary to sustain health and life, and which any number of them, no doubt, will continue to believe contains all the nutrient material necessary to sustain life.

The *Kronprinz* doctors and crew did not know, any more than do these millions of Americans know, that they had been living upon a diet deficient in a balance of acid and base-forming elements in the "ash" content of their food.

Living on Foodless Foods

They were not aware that they had been subsisting upon food the base-forming elements of which had all been "processed" out; and that, as a consequence, they were suffering from acidosis, which caused the extraction of lime salts from the muscles, fibrous tissues, nerve-cells, cartilages and bones.

They failed to realize that the deficiency of lime salts in their diet leads to weakness and irritability of the muscles, with neuralgic pain, as well as effusion into the joints, and the consequent painful swelling of these joints, which finally resulted in thinning and eroding their cartilages.

They little recked that the failure to supply lime salts in adequate amounts is a prolific cause of the tuberculosis which many of them were beginning to develop.

These *Kronprinz* victims were consuming huge quantities of "refined" foods, deficient in life-giving lime and potassium salts and iron. They were getting no fresh vegetables, whole wheat, or any other food that would supply them with these necessary salts.

Even the water they drank was deficient in lime or other salts. For it was produced by a process of distillation from sea water, the effect of which was still further to abstract from the tissues themselves more, and ever more, of the precious calcium salts that should go to nourish cell structures.

Even Their Drinking Water Was Demineralized

According to calorie figures — which exhibit the lying characteristics of most figures — they were securing an ample supply of energy-giving material.

Any active "food expert" could have estimated that they were getting all they required, and more than they required, in calories of food value to keep them in the very pink of physical condition. Yet this crew developed typical symptoms of

But They Got Their "Calories" All Right

paralysis, atrophy of the muscles, inflammation of the nerves, dilated hearts, edema, and anemia.

The ship doctors, and the consultants they engaged as soon as the vessel came to port, agreed that the cause of the trouble was polished rice; notwithstanding the fact that the *Kronprinz* crew ate rice only once a week, or one meal out of twenty-one.

How the "Beri-Beri" Was Banished

Finally Professor Alfred McCann, who has been one of the most valiant contenders for rationalism in diet, suggested to Dr. E. Perrénon, the ship's chief-surgeon, that the men were suffering from mineral salt and vitamine starvation, and that the rational treatment for their condition was to feed them mineral salts and vitamines in their diet.

It was so ordered. Wheat bran, whole wheat bread, carrots, parsnips, turnips, onions, spinach, beets, cauliflower, string beans, asparagus, lettuce and other forms of salad, fresh vegetable soup, the yolks of eggs, unskimmed milk, orange and lemon juice and limes, were given with a liberal hand.

Alkaline waters were freely administered, to increase body alkalinity and help neutralize the acid end-products of the meat and white

flour diet. Best of all is liquor calcis et sodii phosphatis compositus. It has the following composition per hundred parts of water: Sodium carbonate (Na_2CO_3), 00.404; sodium phosphate (Na_2HPO_4), 00.023; sodium chloride (NaCl), 00.080; calcium carbonate ($CaCO_3$), 00.057; magnesium carbonate ($MgCO_3$), 00.004; potassium chloride (KCl), 00.004.

The result was that in ten days forty-seven sick men were returned to duty, and in a few brief weeks every single member of the crew had recovered. Even those who were paralyzed regained considerable of normal function.

The Moral of the Tale

The moral of the story is that wrong food is the cause of grave pathological changes in the structure and functions of the body; and that the ravages of tuberculosis, nervous disease, malnutrition, and the lowered vitality that inevitably leads to grave disorders, can be overcome — by proper feeding.

It is as simple as A B C. But will the American public, and the public of the world, be allowed by the altruistic manufacturers of demineralized food to learn the lesson?

A deterioration in the physical state may be brought about by feeding a diet consisting

Proper Nutrition Demands More Than Food

exclusively of meat, or entirely of vegetables, or a regimen lacking in fats, sugars or starches. This is frequently noticed as a result, for instance, of the starch and fat-free diet sometimes injudiciously resorted to in the treatment of obesity.

On a diet consisting almost exclusively of meat a patient will become much thinner. But while he is doing so he not infrequently will develop various unpleasant symptoms, such as faintness, fatigue, a tendency to perspire on the slightest exertion, nervous excitability, constipation and various functional conditions.

Proteid Alone Will Not Replace Albumin Loss

A one-sided diet of this nature will invariably bring about a diminution in the amount of albumin in the body. This loss of bodily albumin may often be fraught with grave consequences, for when excessive quantities of meat are taken without the addition of starches and fats it is not possible to maintain the nitrogen balance.

In a diabetic patient there will frequently be an aggravation of the condition, as well as the formation of acetone bodies, so that very frequently such patients die in coma, owing to acid poisoning.

On the other hand, when an occasional baked potato, or some other carbohydrate is added to the diet, immediate improvement will be manifested.

An exclusive starchy diet may give rise to equally bad results. For when starches and sugars are taken in excessive quantities, acid fermentation takes place in the intestine, and bowel peristalsis is greatly increased.

An Exclusive Vegetarian Diet Just as Unphysiological

As a consequence, food is eliminated from the body too soon for the intestinal canal to absorb the nutritional elements, and emaciation will result. Those who are required to depend largely upon carbohydrates — on rice, for example, as do the poor Chinamen and Hindoos — are usually, for this reason, very thin.

With vegetarian faddists, who attempt to live upon a purely vegetable diet, the same emaciation, and the anemia that almost always accompanies it, is observed.

When albumin is deficient, which it always is in a vegetarian diet, much more fat is required. This fact, however, is generally ignored by vegetarians.

Anyone who lives upon plant food exclu-

sively eliminates unused a much higher percentage of his nutrient material than one who combines his vegetables with a little meat.

What Atwater Found Out About Vegetable Foods

Atwater, experimenting upon himself, found that on a purely vegetarian diet 28.26% of the nitrogen substance of the food was passed in the feces.

When, however, a moderate amount of animal food was added, the assimilation of food substances was markedly improved, only 11.59% being lost. With an adequate amount of animal food added to his dietary only 8.88% was lost.

No competent physiologist now doubts that it is impossible to retain the nitrogen balance of the body with an exclusive vegetable diet. These are conclusions that might well give the hardiest and most determined vegetarian pause — if he be not blinded to scientific values by what amounts almost to a frenzy of fanaticism.

So between those who deliberately starve us for profit, and those who foolishly starve themselves, because they are convinced they are benefited, the physical status of our people is suffering greatly. Nothing short of drastic legislation on the one hand, and copi-

ous doses of education on the other, will ever work the revolution that is necessary if we are not to go from a decided bad to an infinitely more obvious worse.

CHAPTER V

MINERAL SALTS AND VITAMINES

It was in 1911 that Dr. Max Moszkowski, a German physician, succeeded in giving himself an unmistakable case of beri-beri by living for one hundred and thirty-eight days upon a diet which consisted almost exclusively of hulled rice.

After indulging in this rice debauch a few weeks the nervous symptoms accompanying beri-beri — practically identical with those that later affected the crew of the *Kronprinz Wilhelm* — manifested themselves.

Diseases Made to Order by Wrong Food

The characteristic dropsical affection of the skin, followed by soreness of certain groups of muscles, stomachic disturbances, loss of functioning power in the muscles of the legs, and finally, the typical and dangerous irregularities of the heart action, left no doubt as to the nature of the disease.

It was identical in its character with the condition that had been experimentally produced in fowls and pigeons by feeding them

polished rice; which condition terminated invariably in the paralysis and death of the birds when the feeding of the demineralized rice was persisted in.

However, exactly as in the case of the fowls and pigeons that were cured with rice hulls, Dr. Moszkowski eliminated from his system all evidences of beri-beri by injections of an extract prepared from rice hulls. His recovery was rapid and complete, and he subsequently remained absolutely well.

The Cure Ridiculously Easy

The medical officers in the Japanese navy also found by experiment that the polished rice which composed a considerable part of the diet of their sailors, caused the polyneuritis, or beri-beri, from which their crews suffered. This was checked at once, merely by feeding whole brown rice, instead of nice, shiny, polished rice.

The Japs Also Know How to Cure Beri-Beri

This discovery was applied to the epidemics of the disease which were ravaging our Philippine possessions, with the result that beri-beri is now another of the long list of diseases that have been finally conquered by the ingenuity of man.

These experiments proved conclusively that,

in addition to their phosphorous content, there is in the hull and husks of grains a substance that exercises a profound effect upon the well-being of the organism.

But "prison edema" still remains; tea and toast and tuberculosis still make up a trio whose power for evil is tremendously potent; rickets, malnutrition, chalky teeth, and extra susceptibility to disease, are still evident among a vast number of our population.

But We Haven't Learned Our Lesson Yet

Even among our country people, who send the best food they raise to the city, and eat the remainder, evidences of malnutrition are common. Why?

It's because they ignore the fact that in the bran, or outer covering of our grain foods, and in the skins and the germ of cereals, there exist substances — for there are probably many varieties of them — the administration of which influences in some mysterious way the digestion and metabolism of food, and the lack of which predisposes to grave organic disorders.

Lack of Mineral Salts and Vitamines to Blame

Casimir Funk, who first brought the hypothesis into general recognition among scientific

men, called these substances "vitamines," from "amin," a chemical compound, and "vita," life.

Funk considered the cause of beri-beri, pellagra, scurvy and rickets to be the lack of substances, each of which manifested specific results, determining by its absence the nature of the disease.

Ordinary brewers' yeast is loaded with this material, which has been isolated, and dried in a solution of clay, in which form it is conveniently kept for any reasonable length of time and quite readily administered. Fowls that are moribund with polyneuritis almost invariably respond at once to the administration of this material, and recover within a very short time.

Most Plentiful in Yeast

But equally good effects, although perhaps not so rapid in action, can be obtained by eating wheat bran, or the germ of corn or other grains; or by drinking milk, or partaking of other material, such as spinach, collards, turnips, cabbage, butter fat, or egg yolk rich in mineral salts and in these life-giving principles.

In this connection the experiments of Dr. E. N. McCollum, of the School of Hygiene

and Public Health at Johns Hopkins University, have a peculiar significance.

How Dr. McCollum Killed Rats

Dr. McCollum proved, in a series of experiments with fifteen thousand rats, that the rodents will starve — and it may be inferred that men, treated the same way, would also starve — if fed on a diet of Indian corn alone. On corn and olive oil the rats did a little better. But with the addition of greens of some kind they thrived, waxed fat, and multiplied.

We now know that this is because the greens, as well as the outer layers of cereals, contain a substance — probably some form of vitamine, although McCollum objected to the term "vitamine," because it was, chemically speaking, misleading and inaccurate — which furnishes some indispensable stimulus by which the system is enabled to transform certain food substances into tissue.

This substance Dr. McCollum called "water soluble B." The "fat soluble A" — also isolated by Dr. McCollum — which is found in butter fat, cream, and other animal fats, but which, curiously enough, is not present in vegetable oils, is also a vitalizing agent of inestimable worth, although the experiments

proved that the lack of animal fats and their vitamine content could largely be made up by the administration of green vegetables.

Treating Rats Like Human Beings

Dr. McCollum brought one batch of rats to the actual verge of starvation by giving them all they could eat of bolted wheat flour, degerminated corn meal (the kind we ourselves always get), rice, corn grits, starch, molasses, sugar, pork fat, cabbage, sweet potatoes and salt.

There was, however, too little of the leaf of the cabbage to "protect" the animals, as ninety-five per cent of the diet was derived from the endosperm, the inner part, of the cereals, together with pork fat and saccharine substances.

Starving to Death on Food

This is the type of diet that prevails in the regions where pellagra is widely diffused; a diet very similar in its nature to that upon which millions of our population try to nourish themselves, fatuously believing they are being well fed while they are doing so.

It is a form of diet on which the average person who rarely eats green vegetables, or who seldom drinks fresh, whole milk, would

be thoroughly satisfied to starve to death; and the only reason he doesn't is that occasionally he gets a remission in the shape of a pint of ice cream, or some other food that supplies for a time his vitamine deficiency.

These revolutionary discoveries have opened up an entirely new vista into the etiology, or causes, of disease. For there are doubtless many nutritional disorders which may fall far short of being pellagra, beri-beri, or scurvy, and yet which may present definite disease pictures, in a nervous or constitutional way, that can be readily attributed to a complete or partial deficiency of the "water soluble B."

Poisoned by the Lack of Vitamines

Within the past few years we have found that a deficiency of vitamines in certain grains will inevitably produce beri-beri, unless the deficiency is made up by a mixed diet, which will increase the sources of the "water soluble B."

This was admirably illustrated in a recent outbreak of beri-beri in Newfoundland. The cause of the trouble was found to be a beautiful white "patent flour." In the process of beautifying this flour all the germ was

How the Fishermen Got Neuritis

milled out of the grain, because this was the part of the grain that caused the dark hue of the loaf, so repugnant to the aesthetic tastes of the Newfoundlanders.

Just as soon as these people were put upon a diet of whole wheat bread, and as soon as they went back to the use of butter, instead of oleo, they recovered.

It has been shown, by the very reliable phosphoric acid test, that corn meal, owing to the fact that it is almost invariably degerminated, is very low in its vitamine content, and that the germ itself contains six times more of the vitamine substance than does the product in daily use on our tables.

Corn deteriorates very soon because of the large amount of oil it contains. Hence, "degerminating" methods are introduced into modern milling. The germ, which is removed with the bran, is sold generally to dairies or to hog-raisers, with whom it has a great reputation as a "milk-maker" and pork producer.

Thus the very substance which man needs for his development and growth is discarded, and is fed to the cattle or the hogs.

In the very interesting and highly instructive experiments with the pigeons it was

How the Pigeons "Proved Up"

proved that the polyneuritis — which is the analogue of beri-beri in man — could be produced quite uniformly by feeding an exclusive diet of degerminated corn meal.

Yet even though the paralysis was complete, the disease was invariably cured within a few hours by the administration of an alcoholic extract of the corn germ.

In many instances the extract had to be given in a tube, and massaged out of the paralyzed crop, yet the curative effect of the extract was startling in its thoroughness and rapidity.

This, of course, was only a duplication of the work done with polished rice and "rice polish"; but it shows clearly the universality of the law.

Taboo the Baking Soda

One of the most vital and revolutionary things in this study of vitamine deficiency is the part played by baking soda and other strong alkalies in the cooking of cereal food.

It has already been proved in the Philippines that cooking soda increased the deficiency of polished rice. In a series of recent experiments, however, on fowls and pigeons, it was demonstrated that corn meal cooked with

baking soda produced polyneuritis much sooner and much more certainly than when plain corn meal mush was administered to the martyr birds.

Baking soda, as everyone knows, is decomposed into sodium carbonate, a very harmful substance, when it's in food, and into carbon-dioxide, a waste product of which we already have too much in the system.

It is the carbon-dioxide that causes the biscuits to "rise." Sometimes an attempt is made to neutralize the deleterious effect of the soda upon the organism by adding a certain quantity of sour milk, to overcome the injuriousness of the alkali; but there is only an empirical guess as to whether or not there is enough.

Until we know just how much alkali is sufficient to produce serious changes in the efficiency of the "fat soluble A" vitamine, it might be very sensible for us to go back to the old-fashioned method of "rising bread" with yeast, and leave the use of the bicarbonate of soda to those who are not so particular about their health and as to what eventually becomes of them.

Better Go Back to the Old-Fashioned Yeast Again

In fact, we could go back with profit to the

old hoe-cake and corn-pone which our ancestors baked in the ashes, and upon which they thrived mightily.

If we could add to this a kitchen milling apparatus, grind our own corn and wheat, and use the entire ground product — instead of feeding the essential nutritive salts to the cattle — it is quite possible that the practice of neurology might become increasingly less profitable, and the health of our populace increasingly less interesting to undertakers.

It's Hard to Teach an Old Dog New Tricks

All of which leads to the conviction that the ignorance of the average man or woman on the subject of food is almost unbelievable. Were it not so they would not continue to throw to the pigs the valuable mineral salts in the bran and husks of the grain, and then eat the denatured endosperm themselves.

They would not consume billions of pale biscuits and thousands of bales of food-free hay. They would not vehemently demand their demineralized white sugar, instead of the natural brown sugar that contains vital mineral salts.

They would not consistently refuse to eat dehydrated vegetables — with all the cell substances and mineral salts of the vegetables preserved indefinitely in a dried state — which,

They Would Have Fresh Vegetables Twelve Months in the Year

when properly prepared, are almost as appetizing as are the fresh vegetables.

They would, instead, do all those things that bring about the normal physiological results which are, or should be, the main object of our use of food.

It *could* be done, merely by the diffusion of correct information, and the universal adoption of rational principles. Sometime, probably within the lifetime of men and women still living, all this will be done. Until then, we shall have to keep hammering away in the sturdy hope that sooner or later these things, that should be so obvious, will be universally recognized and uniformly followed.

CHAPTER VI

FOOD FADS AND FOOLISHNESS

There are probably more crazy ideas on the subject of diet than on any other subject connected with health. All sorts of fads, foibles, and fancies have been perpetrated upon the gullible public, who by the scores of thousands have been led to seek the elusive Fountain of Youth through the mediums of starvation, raw food, hay, vegetarianism, fruit, nuts, and all other forms of man, monkey and squirrel fodder.

For some inscrutable reason many of these devotees survive, a little anemic and the worse for wear possibly, but still able to get about.

The Fasting Fanatic

Perhaps the most radical of all diet cranks is the individual who for days, or even weeks, absolutely dispenses with food. If there is anything the matter with him physically (he is chronically under suspicion mentally) he "starves it out"; not by cutting out the particular items of food that may be responsible for his condition, and then building up his system with the

proper food, but by eliminating *everything* except water, and possibly cigarettes.

That fasting for a limited time is a splendid thing for one who for years has habitually abused himself by overfeeding, is not to be denied. The system gets a chance to utilize the excess pabulum stored up in the tissues, while at the same time it is given an opportunity to get rid of the accumulated waste.

But for the weak, anemic woman, or the pale-faced pie eater, suffering from jaundice, intestinal atony, or malnutrition, to attempt to cure these disorders by abstinence is as ridiculous as would be the attempt to cure an automobile of an accumulation of carbon, or a "knock" in the cylinder, by trying to run the machine with water instead of gasoline.

It is true that the human machine is fearfully and wonderfully made, and that it can, under certain conditions, stand a tremendous amount of abuse; but this doesn't prove that the abuse is beneficial.

Because Signor Sacco could and did starve himself for forty-six days and four hours, and because the French murderer, Granie, existed without food for sixty-three days before he finally succeeded in cheating the guillotine, doesn't prove that the process is beneficial.

Any good that can possibly come to any invalid from abstaining entirely from food can be multiplied ten-fold by so regulating the diet that the *proper food elements* in the *proper amounts* can be utilized to correct the invalidism.

It is admitted that the first step in digestion is thorough mastication of the food. But this does not necessarily mean that we must adopt the Fletcherian style of "fluidizing" the bolus of nutriment into a pap, until it slips down almost without conscious effort.

The Delusions of the Fletcherite

For good honest chewing, chewing that reduces the material to such shape that the saliva and the gastric juices can act upon it, is sufficient.

There is a happy medium between the jaw-wearing and utterly useless practice of chewing food, and "tasting and tasting" it — especially meat or albuminous food, which is not acted upon at all by the salivary secretion — and the quick-lunch style of bolting, which depends upon breaking off a piece that can be swallowed without choking and then washing it down with a swallow of fluid.

Remember also that we have more than

thirty feet of intestines, the function of which is to digest and appropriate through the lacteals — the small ducts that convey the digested material into the circulation — converted food products, and then get rid of the unused portions.

Give the Alimentary Tract Something to Do

These intestines require bulk to functionate upon, just as the kidneys require water. On a concentrated diet, or on one so Fletcherized as to leave but a minimum amount of work for the intestines, the alimentary tract "goes stale."

A certain amount of work is needed by any organ in order to keep the organ active. If there is no bulk to combine with the end-products of metabolism thrown into the intestine the bowels become inert and sluggish. This permits the reabsorption of these poisons into the circulation and starts the vicious cycle of poison-producing that results in the development of more and ever more poison. "Everything in moderation" is quite as good a rule in chewing as in anything else that has to do with physiological functioning.

The subject of drinking with meals is one which has aroused considerable contention in

recent years. Lately the conviction is gaining ground that drinking freely with meals is of decided benefit to digestion.

Should We Drink When We Eat?

To this contention I must take exception. For I am firmly convinced that the less fluid we take with our meals the less digestive trouble we are likely to develop. This in spite of the recent experiments which have been interpreted to "prove" the contrary.

First, because if the food is taken as dry as possible we must necessarily chew this food more thoroughly in order to swallow it without strangling. This excites a larger flow of saliva, and consequently a greater quantity of this alkaline fluid is taken into the stomach with each meal, thereby stimulating an increased flow of hydrochloric acid in the stomach.

With this method of eating, however, the food in the stomach is necessarily in too solid a state for the most perfect gastric digestion.

To obviate this, fluids should be taken *before* or *after* the meal. This causes the particles of food to be widely separated, and thus to present the largest possible surface to be attacked by the gastric digestive

Drink Before or After Meals —But Not With Meals

fluids, without, at the same time, reducing the total of its alkalinity.

The best fluid to be taken after the meal is coffee, made rather weak and drunk without sugar or cream, both of which tend to excite fermentation and ultimate decomposition of the food in the intestines.

Black Coffee an Excellent Aid to Digestion

The active principle of the coffee, caffeine, is a safe stimulant to use in moderation, as it tends to increase the activity of all the digestive processes.

Tea, which contains tannin, tends to "tan" the food, especially meat substances, and makes it much more difficult to digest. Many people cannot drink tea, in even the smallest amount, without exciting fermentation, which, of course, means imperfect digestion and utilization of the food.

If tea is used at all it should be freshly steeped and rather weak; sugar and cream both increase its liability to cause fermentation.

Alcohol taken in conjunction with meals also has, in most individuals, a tendency to retard the secretion of the digestive fluids and to increase fermentative changes in the food.

Milk is an ideal food — for infants. Also

for adults — for a limited time, and under conditions which demand no great amount of physical exertion. As a steady diet for a hard-working grown person, however, milk must be considered essentially a one-sided food; for milk lacks iron, phosphorus, and the nucleo-albumins — which lack inevitably predisposes to anemia and malnutrition, even in children who are permitted to nurse for too protracted a period.

Is It Safe to Live on Milk?

Indeed, this protracted use of milk to the exclusion of all other foods tends finally to make children susceptible to infections, and in later life, even to develop tuberculosis.

Another disadvantage of milk is that one would require a stomach like a milk can in order to carry around a sufficient supply of food and fuel adequately to "run" the body machinery; and then he wouldn't have enough oxygen in his system to properly convert the proteid elements.

Enthusiastic adults can get along fairly well on an exclusive milk diet for a limited time, say four to six weeks. When persisted in, however, milk is quite as injurious as is any other one-sided food; for when taken

The Nutrient Salts in Milk Not Assimilated

alone, milk is not completely assimilated, fully 18% of it being lost through faulty assimilation. At least eight quarts would have to be taken daily to adequately sustain the body in health.

When bread and butter or cheese are added the assimilation is much better, for the diet is no longer one-sided. This is proved by the experiments of Rubner, who found that 8.3% of the nitrogen, 6.4% of the fat, and 41.1% of the nutrient salts contained in the milk remained unassimilated; while when cheese was taken with the milk only 3.8% of nitrogen, 7.1% of fat, and 37.5% of the salts were lost. From which it will appear that while milk fills a most important place in the dietary, it must be taken as a food, not as a fad.

Can We Live Healthily on Vegetables?

I never knew but one Simon-pure, dyed-in-the-wool vegetarian. He never even slaughtered a chick in its shell by eating an egg. He ate no butter. He drank no milk. And he was the most cantankerous, trigger-tempered cuss it has ever been my ill-fortune to meet. He was a misery to himself and to everyone who ever had anything to do with him, all due to nothing more or less than to

his dangerous and very unhealthful mode of nourishment.

This man was a printer who used to get out a medical journal of which I was editor. Finally, after he had printed a couple of dozen of my Post Graduate Medical School lectures, we noticed a remarkable change in his disposition and in his appearance. He became really sociable, and almost human. His anemic, cadaverous look was replaced by a rugged wholesomeness.

None of us could understand what had happened to the old fellow, until one day one of my students happened into a restaurant near the school where sat Mr. Printer vis-a-vis with a big, thick, juicy steak.

Caught With the Steak

The problem was solved. Our touchy torment was feeding himself *real* food. He had reformed, and was treating his starved nerve-cells and his anemic blood to regular nutriment. The result was so very satisfactory to him, and to his long harassed family, that he never afterwards relapsed.

The human system can tolerate a lot of abuse; but this does not prove that abuse is commendable. Forcing one's self to live for a protracted period upon an exclusive vege-

table diet is an abuse that falls only a few degrees short of suicide — or slow murder.

It is admitted that it can be done, and has been done; but rarely with profit to one's state of health; for it inevitably produces anemia and under-nutrition, as well as being a frequent cause of tuberculosis.

Neither Class of Food a Perfect One

Both the vegetable and the animal foods, of course, contain all the elements essential for maintaining life. They both contain mineral salts, saccharine compounds, fats, proteids, and the phosphorus-bearing substance known as nucleo-albumin.

Neither one, however, contains these five groups of compounds in just the proper proportion for the highest type of nutritive activity.

Milk, perhaps, comes nearest to the perfect requirements. But milk is deficient in nucleo-albumin, and it also contains an excess of the saccharine and fat constituents as compared with its proteid elements.

Vegetables Too Rich in Sugar and Hay

In the vegetable class there is an excess of starch and sugar, as well as cellulose — or hay — and a decided deficiency in fat. Yet this class of food may contain a liberal percentage of pro-

tein, and in many instances a high percentage of nucleo-albumin.

This is especially true of green vegetables and legumes, such as peas and beans. In some of the vegetable foods, such as rice, the proteid constituent is so large, in relation to the starch, that by adding a certain amount of oil, as the Chinaman does, very good results in maintaining health and developing a robust constitution can be secured.

But to secure them one must be born a Chinaman — with an ancestry whose alimentary apparatus has been trained for hundreds of years in the task of extracting nutriment from rice.

For the real test of a food is not its chemical formula, or its so-called calorie value, but its *digestibility*, its adaptability to the body requirements.

"Vegetable Meat"

Of recent years olives have been highly extolled as a food fulfilling all the requirements of meat in the dietary. The truth of the matter is that olives are largely ornamental and condimental. Their food value consists chiefly of their oil content, which furnishes heat and energy, together with their minerals — notably iron, potash and lime — which increase

their wholesomeness. But to compare them to protein foods — like lean meat, which builds tissue and nourishes the body — is perfectly absurd, no matter how wholesome they may be in a general sense.

One ounce of olives contains about the same amount of fat as does meat (7.8 grams); but the meat, in the form of beef, would contain also 6.7 grams of protein, whereas olives contain only 0.3 per cent — or about one twenty-second of the constructive food value of meat.

Either Animal or Vegetable Diet Will Sustain Life. But How?

As to digestibility, it has been proved beyond a question of doubt that the animal foods, taken as a class, are much more easily digested, absorbed, and assimilated than the vegetable foods.

This is easily explained by the fact that the molecular structure as found in the animal kingdom is much more simple than that found in the vegetable class. For it is monomeric in construction — that is, its component atoms are similar; while the vegetable class, on the other hand, is multiple, or polymeric in construction, and has to be changed into an isomeric form before it can be acted upon. This explains the great ease

with which animal food can be digested, and is a point that but few vegetarians ever take into consideration, if, indeed, they ever take any of the scientific details of food values into consideration.

On the other hand, this ease of digestibility renders the animal class much more likely to sub-oxidation than the vegetable class, unless the quantity taken is continually kept well within the limit of the oxygenating capacity of the system.

But Don't Eat More Meat Than You Can Furnish Oxygen to Convert

When this is done, the digestive powers are conserved, the highest possible grade of nutrition established, and all danger of sub-oxidation avoided.

And when under a vegetarian diet, various forms of sub-oxidation disorders are found, as well as nervous defects, from chronic nerve starvation, these rapidly clear up under an animal diet.

Vegetable foods by reason of their indigestibility are much more prone to excite putrefactive fermentation in the intestinal canal; manifesting themselves in wind-storms of a more or less emotional nature, and in the undue irritation they may cause the

Vegetables More Likely to Ferment

mucous membrane in their passage through the alimentary tract.

Vegetable foods, on account of their complex construction, are much more difficult to digest, to absorb and to assimilate; hence they are not so economical. Yet there is not so much danger of exceeding the oxygenating capacity of the system when on a vegetable diet, because such a large proportion passes through the alimentary tract undigested and unabsorbed.

This is the explanation for the good results that sometimes follow the change from a liberal animal to a liberal vegetable diet. The oxygenating capacity of the system is not exceeded, and Nature does what could have been accomplished in a much saner manner, merely by regulating the quantity of the food taken.

We Can't Afford to Emulate the Cow

If we had four stomachs, and nothing to do, we might get along on vegetable food almost as well as a cow; but lacking a hundred feet or more of intestines, a large cecal pouch, a cud-chewing technic, and a few special ferments for the digestion of cellulose, we fare badly on a strictly vegetable diet.

Remember that even bread requires five times as much pepsin as meat, and that the

chief repair of body structure comes from the albumin, so difficult to extract from vegetable foods.

The indigestibility of vegetable foods, and the large amount of fecal matter they produce, while they may have a tendency to loosen the bowels, are always a source of danger. First, because they carry quantities of incompletely digested food out of the system, thereby robbing the individual of a large part of his nutriment; and second, because of their likelihood to produce irritation, resulting in intestinal catarrh.

The Putrefying Vegetable

If this occurs, the excessive production of mucus forms a favorable nidus for the growth of abnormal microörganisms, dangerous to health, because of their activities in exciting putrefactive fermentation.

The excessive amount of sugar in the vegetarian diet is prone to undergo fermentative changes, causing more irritation, and still further favoring the development of putrefactive fermentation.

Furthermore, all the cane sugar of vegetables has to be converted into glucose before it can be absorbed, which conversion is an excessive tax upon the digestive energy.

Of course, provided one does not die from the experiment in the interim, the system can ultimately become accustomed to utilize vegetable foods; but those who care anything about their health will secure the largest amount of it by using both animal and vegetable foods in combination; in other words, by a well-regulated mixed diet, but one in which the animal food always predominates.

Peanuts, Squirrel Food and Hay

While it must be admitted that certain swashbuckling death defiers have subsisted for a time in apparent good health on a diet of peanuts, or pecans, or the foodless foods so graphically represented by altruistic merchants as manna in the wilderness for hungry humans, it must be insisted that these feats in dietetic legerdemain cannot be taken seriously.

The foods are so "one-sided," so far from being a balanced ration, so absolutely unfitted for protracted human use, that they do not even warrant serious consideration.

Squirrels and other rodents, well provided with the ferment, cytase, which enables them to digest the cellulose in such foods, can thrive upon them; but the average human, lacking cytase or a gizzard, or a half dozen stomachs,

cannot. And the shorter a time he tries, the longer a time he'll live.

At some of the famous "grape cure" resorts in Germany and Austria great quantities of grapes are taken daily for the relief of various organic disorders, chiefly induced by drinking beer and eating six or eight meals a day.

Is Fruit a Food?

It goes without saying that the grand housecleaning these patients get from the action of the fermenting grapes and their seeds and skins is undeniably of immense benefit. But any other laxative, less likely to irritate the intestinal canal, would probably do quite as much good, and not nearly so much harm; for the excess of acids in the grapes tends to reduce blood alkalinity, and to throw the chemical balance of the secretions out of their normal proportions. This excess of acid is tolerable for a little while, but may excite grave disorders if persisted in.

Of course fruit contains mineral salts and alkaline bases that give it a unique food value — when properly used; but it is so seldom properly used that it has become one of the chiefest sources of all danger.

When Metchnikoff expounded his theories regarding the cause of senility, asserting that

Does Sour Milk Prolong Life?

the daily use of sour milk would conduce to longevity, he naturally had an interested audience; for, "everything a man hath will he give for his life."

While, unquestionably, putrefactive fermentation in the large intestine is a cause of many degenerative conditions — conditions which undoubtedly contribute to senility — and while the use of the Bulgarian bacillus or the lactic acid ferments will lessen the number of bacterial flora in the upper intestine, it is doubtful whether nearly so much importance can be attached to the bacteriacidal action of these bacteria as has been claimed for them. They simply haven't lived up to their reputation.

Milk is of benefit in certain conditions. Sour milk is even more of a benefit, for it has already undergone lactification, one important process of digestion. The ease with which soured milk is assimilated, and the small amount of residue it leaves, makes it a valuable food form.

But as a panacea for old age, and as a cure for most of the diseases which mankind acquires or inherits, it leaves much to be desired, because the lactic acid bacillus does not become the dominant organism in the intestine, even

though it may be present in moderate numbers; and when the lacto-bacilline, or the artificially soured milk, is stopped, the B. Bulgaricus dies in a few days, showing that he hasn't established any permanent domiciliary interest in the intestinal tract.

A Splendid Food—But No Panacea for Old Age

Matzoon, Kefr, Kumyss, and artificially soured milks, are splendid foods. But, cost and food value considered, it is doubtful if they are any better than home-brewed sour milk, or even ordinary buttermilk.

Home-Brewed Sour Milk Also a Good Life-Lengthener

Any bacteriacidal effect that can be secured with any of these prepared milks can be secured, with almost equal facility, with the home-prepared varieties, and at a very greatly reduced cost.

Of course, these are only a few of the most common delusions of diet. To treat them all would require an encyclopaedia and might bring on an acute attack of gastrophobia.

CHAPTER VII

THE FALLACY OF THE CALORIE

A calorie is the length, breadth and thickness — as well as the fourth dimension — and the shortest distance between two points, of the limit of credulity. For no more colossal humbug has ever been perpetrated by the medical profession than the humbug of attempting to measure food requirements as one would measure fuel needs.

Yet scientific men, who should know better, are lending their sanction to the belief that nutritional requirements can be translated into terms of heat units; medical colleges are teaching the "science" of calorie measurement; hospitals and sanitaria formulate diet lists for helpless invalids and convalescents, based upon the patient's supposed calorie necessities; while nurses are taught to regard the calorie almost as a fetich — to be worshipped with bated breath and whispering humbleness.

Even restaurants have adopted the absurd-

ity, and are printing before each item on their bills of fare the calorie value of that particular item — probably in a heroic attempt to divert the eater's mind from the inflated price on the other end of the printed line.

Even Restaurants Are Getting Scientific

The restaurants justify their patriotic and self-sacrificing course by stating that the calorie figures are computed by experts in nutrition, and that the study of the energy value of the food, multiplied by the price list of the various items, "will permit customers to conserve food by ordering scientifically."

Now, when medical colleges, hospitals, dietitians, nurses and restaurant keepers unite to propagate a delusion, what earthly hope has the poor layman of escaping the infection? And so the belief is widespread, and generally gaining ground, that one's food requirements can be accurately measured in calories — notwithstanding the fact that a person can be fed upon the most formidable calories on the bill of fare, and yet promptly and effectively starve to death.

First, just what is a calorie?

The calorie is a unit for measuring either heat or energy, which, of course, are trans-

mutable properties of matter. It represents the amount of heat required to raise the temperature of a kilogram of water (35 ounces) one degree Centigrade.

Measuring a Measuring Unit

To raise the temperature of the kilogram of water ten degrees would require ten calories, and so on. In terms of energy this means that one calorie of heat generated in a steam engine will produce enough energy to lift a load of three pounds one foot in the air. Therefore, the number of calories necessary to do this amount of work is the mechanical equivalent of three foot-pounds.

To determine the value of any food in terms of its energy and heat producing capacity an instrument called the "calorimeter" is employed. This instrument is constructed on the plan of a vacuum bottle or a fireless cooker. It is equipped with a surrounding of ice or ice water so that the interior of the apparatus remains unaffected by the exterior heat.

How the Thing Works

In the centre of this contrivance is the "bomb." This contains a measured amount of the food or material to be tested for calorie units. This material is surrounded by a defi-

nite quantity of water, the temperature of which in this compartment would naturally be raised by the burning of the food or similar substances in the bomb.

This material is now ignited and consumed by electricity. The raising of the temperature of the surrounding water is noted by means of a very sensitive thermometer extending into the water. In this way it can accurately be computed that meat, bread, butter, cheese, candy, or any other combustible substance, has a heat-producing value of just so many calories.

So far, so good. But what does it prove?

Calorie Values a Myth

It proves merely that food that can send the mercury to the boiling point may yet be totally devoid of all that is needed in order to maintain the body in a state of health. For food that is oxidized or consumed in the human body is burned by chemical action — which is an entirely different thing from combustion, the combustion that takes place in a furnace, or in a calorimeter bomb.

On the basis of these measurements fat, for instance, yields approximately twice as much heat as do the sugars or starches, or even the proteins. In fact, weight for weight, fats

have a much higher calorie value than any other type of food. Yet who would be obtuse enough to believe that a fine, calorie-filled diet of fat would be best adapted to supply all the requirements of growth and nutrition?

Calories Can't Build Tissue, Make Blood, or Strengthen Bone

Calorie scientists lose sight of the fact that a considerable part of the heat which results from the oxidation of food in the body, goes to maintain normal temperature, and that where the oxidation processes are impaired by disease or faulty nutrition, no amount of calorie value can be depended upon for this purpose.

Nor can calories, no matter how numerous, put iron into an anemic blood corpuscle, or increase the amount of manganese in the coloring matter of the blood.

Foods which have the very highest percentage of calories are absolutely worthless for building fluorides around the tooth structure, or for feeding calcium and phosphorus into the bones.

Calories have nothing to do with maintaining the normal alkalinity of the blood, and preventing acidosis; or supplying the body with magnesia, sodium, sulphur, potassium, or other mineral salts and colloids, which are in-

dispensable in the control of the various intricate metabolic processes of the body.

In short, the scientists and dietitians who have become devotees in the worship of the Great God Calorie have entirely lost sight of the fact that the food requirements of the body, as expressed in the *actual chemical needs* of the organism, and the fuel, or energy requirements, as expressed in terms of calories, have no more to do with one another than have ships, soup-tureens and Mad Hatters.

The Tomfoolery of Diet Tables

Notwithstanding all the weight of scientific authority, of Government Reports, of hospital, sanitarium and dietetic formulas, I contend that the calorie is valueless, misleading, and absolutely to be condemned.

It ignores the function of nutrition, and the thousand and one equations that enter into this function. It takes not the slightest thought of the colloids, salts, ferments, enzymes and vitamines — which substances, in many diseased conditions, may be the most essential of all food elements favoring the restoration of health.

Calorie enthusiasts ignore the fact that foodstuffs can be refined, as indeed they are being refined every day, until not a trace of the col-

loids, salts, ferments, enzymes and vitamines remains in the food; and yet the high-sounding calorie value of the food remains unchanged.

The "science" of calorie values fails to recognize the growth-promoting value in foods which, though valueless from the standpoint of the calorie tables, nevertheless are absolutely indispensable in maintaining normal blood fluidity; in regulating the secreting activity of the ductless glands; in preserving to the organism its marvelous ability to function.

Alfred McCann, in his book "Starving America," and in his popular articles on dietetic chemistry, has persistently maintained this position. While Henry T. Brooks, M. D., Professor of Pathology in the Post Graduate Medical School and Hospital, states emphatically that "For some time past I have felt that the feeding of humans on the calorie basis is defective — in fact, a 'delusion and a snare.' It has been conclusively revealed as an error, and the sooner the medical profession recognizes the falsity of the theory, the more profitable will it be for those who depend upon physicians for direction and advice."

In a recent article in the Journal of the American Medical Association, Dr. Henry D.

Chapin expresses similar views, and makes a strong plea for a reform of this folly.

Starving to Death on Rich Food

Dr. Thomas B. Osborne and Dr. L. B. Mendell, of Yale, in a most interesting series of experiments, demonstrated that animals fed with mixtures of refined protein, refined sugar, fat and starch — the richest possible foods, so far as calorie value is concerned — rapidly sickened and declined under this diet. This, even when the food was mixed with inorganic matter.

When, however, milk whey, which has absolutely no caloric value worth measuring, was added to the feeding, the tissue starvation in the animals was checked.

Whey contains none of the fats or proteid of the milk. It is merely the clear watery fluid in which the milk corpuscles float, as do the blood corpuscles in the blood serum. But it contains iron, calcium, potassium, phosphorus, and other minerals, and probably some of the growth-promoting vitamines present in the milk; and, in spite of its insignificant calorie value, it proved to be a regular elixir vitae to animals condemned to die of starvation on high calorie foods.

Foods such as salt pork (which contains

3555 calories), oleomargarine (3410 calories), refined sugar (1750 calories), white bread (1200 calories), and corn meal (1630 calories), when fed to animals, to the exclusion of other foods, inevitably produce degenerative diseases and ultimately the death of the animal.

Corn starch, corn grits and corn syrup, cream of wheat, polished rice, macaroni, tapioca, white flour, and puffed rice, are peculiarly fatal, owing to their deficiency of mineral salts.

Yet foods which are insignificant in the calorie scale, as, for instance, buttermilk (160 calories), skimmed milk (165 calories), potatoes (160 calories), string beans (170 calories), cabbage (115 calories), lettuce (65 calories), celery (65 calories), spinach (95 calories), are veritable life-savers.

When added to the diet of animals being systematically starved on high calorie foods, they speedily arrest tissue decline; but the animals do not fully recover, nor do they regain their weight and their procreative power until they are once more fed entire grain substances, containing the mineral salts which they vitally need, and the vitamine-containing foods — the " fat soluble A," and the " water

soluble B," discovered by Dr. McCollum, as described in Chapter V.

When these substances, in the form of lettuce, spinach, cabbage leaves, butter and butter fat, together with the germ of corn, rye, or wheat, and the bran of cereals, is added to the diet, the animals recover a perfect state of nutrition.

We Don't Live on the Thing That Measures Fuel Value

Organic beings live on food. The calorie is no part of food — either protein, starch, or sugar. It contributes nothing to the nutrition of organic beings.

The calorie has no connection with lecithin, phosphorus, mineral salts, or the vitamines — biochemic substances that are vitally necessary to health and growth and the maintenance of immunity from disease.

The calorie is merely a tape-measure, intended to determine accurately the needs of vital processes. But vital processes are unmeasurable and unweighable by any system that ignores the activities of life itself — of nutrition, of metabolism, or assimilation, of physiological or pathological functions.

The calorie deals with dead things — carbon, nitrogen, and the elements which undergo changes in their physical form.

Food is reconstructive and vitalizing material, profoundly complex in itself, and infinitely more complex in its processes and in its functions. Food is intended to perpetuate the organic residence of a marvelous activating entity — an entity that lives for a time in this residence.

So merely to measure the oxidation requirements of this complex organism isn't enough; if it were, the calorie would deserve the devotion of even its most enthusiastic worshippers.

As it is, however, the calorie theory is really a tale told by a grandam; a thing of sound and fury, signifying nothing — except that credulity is the most highly developed attribute of man.

CHAPTER VIII

FOODS THAT POISON

Most proverbs are platitudinous drivel, foisted upon the gullible by reformed sinners too old or too anemic to longer enjoy doing the things from which they would have everyone else abstain.

There are a few exceptions to this general rule, however. One relates to the individual capacity for "handling food." It says: "One man's meat is another man's poison." On the face of it this looks absurd, particularly as there is not the slightest particle of scientific evidence to explain *why* this should be so.

But "experiencia docit," as we used to say in our old school days. Experience teaches that the idiosyncrasies of certain people against certain kinds of food are not to be explained on physiological grounds. Neither are they due to suggestion or to imagination.

For the first principle of suggestion de-

mands that the mind consciously coöperate to influence the functions of the body. How can the mind act, if it doesn't know that there is anything to act about?

Getting Poisoned on Milk and Eggs

It is a matter of common knowledge that hundreds of people are made deathly sick by eating a piece of cake, or some other article of food that may contain what nine out of ten of us would consider harmless necessary eggs or milk. Without the slightest knowledge on their part that they are poisoning themselves with these delectable foodstuffs, they are made deathly sick — with vomiting, retching, colic, diarrhea, and a generous sprinkling of other symptoms of acute arsenical poisoning.

Of course we understand that the yolk of the egg is an exceedingly complex body, with a capacity for breaking up into a number of active poisons when undergoing the process of decay. But why should a perfectly fresh egg act with some people as though it were a very bad egg?

Why should pure milk, the most vital and indispensable of all food forms, produce in certain individuals the symptoms of ptomaine poisoning?

This idiosyncrasy is not confined entirely to adults, as might naturally be expected. There are instances in which even infants, when fed cow's milk, develop these same symptoms, and finally have to depend entirely upon albumin water or a wet-nurse for their chance of life.

Cheese is another food that acts as an irritant poison to many individuals, and that even the strongest and hardiest, unless toughened and inured to its ravages, can eat only in limited amounts.

Strong Cheese and Weak Bodies

This is unfortunate, in one way. For, theoretically, cheese is an excellent article of diet, giving almost twice as much proteid as beef, for the same price, and four times the amount found in eggs. Cheese has a pleasing taste, and in small amounts is relished and well digested by most people.

Yet the ferments and the extracts developed in even the mildest of cheeses during their process of ripening have an extremely irritating effect when taken into the stomach of the majority of people, in anything except minimum quantities. This is especially true of the strong Stilton, the sturdy Roquefort, the valiant Brie, the militant Camembert, and the potent Limburger.

The constipating effect of cheese is quite universal, although I have known patients in whom cheese produced exactly the opposite results, and who derived great satisfaction from its use as a laxative.

The Misbehavior of Beans

Weight for weight the bean — with its brother-in-law, the pea, and its sister, the lentil — is probably the cheapest and most nutritious food on earth. As a proteid producer it is almost in a class by itself, price for price, being only about one-eighth as expensive as a regular egg.

Based upon its nitrogenous content, and its really commendable nutrient qualities, the bean may well occupy the commanding position it maintains as the vegetarian's hope and joy. But, as with every other fad-food, which can only be eaten about every so often, and in extremely moderate quantities, by the average man, beans are objectionable. They disappoint the enthusiasts' expectations.

For careful experiments show that, notwithstanding their high nutritive value, peas, beans, lentils, and other legumes, if taken in excess of one-fifth the protein requirements of the system, produce distressing flatulence, a loss of appetite, bowel irritation, and if per-

sisted in, a failure of nutrition. Stock breeders have demonstrated the same thing in the feeding of cattle.

The reason is that inextricably bound up in the bean, is an aromatic oil and a bitter alkaloid, both poisonous to the sensitive stomach in small amounts, and to most stomachs in larger quantities.

This explains why even the Bostonian indulges in beans only Saturday and Sunday, and eats codfish cakes and food the remainder of the week; and why boarding-house keepers, and lumber camps, and the army mess can't have beans any oftener than they do — without exciting a riot. In fact, it explains why no one, except a Mexican, a Trappist monk, or some individuals immune to any ordinary poison, can live on them as a staple article of diet.

In consideration of their high dietetic value, and the comparatively limited use the human race, as a whole, can make of legumes, there is a vast fortune awaiting the man who can discover a means for extracting the teeth of the bean and making it behave itself.

Nuts constitute another prize food which is, according to the analysis and the statements of those who have more enthusiasm than information, specifical- **Why Nuts Are Not Food**

ly adapted to replace meat and animal proteid. It is contended that to solve the present problems as to our chief source of nitrogen supply, and at the same time prevent further crimes against the cow and her dumb associates, all that is necessary is to plant great groves of walnuts, brazil nuts, hickory nuts, and pecans; and go in, at the same time, for peanut raising on a lavish scale.

The Analysis Is All Right

For analysis shows that nuts contain proteid and fats in a readily digestible form. But this does not do human beings much good. For no one who has not a squirrel-like capacity for resisting the irritating action of the poisonous principle found in the kernels and skins of nuts can live on them.

Theoretically nuts are fine. Practically they are impossible. Except in very minimum quantities, taken at rare intervals, they are highly inadmissible as articles of food, as any excessive amount is likely to produce indigestion, diarrhea, and perhaps even appendicitis.

The Baneffulness of Bananas

Those who extol so vivaciously the virtues of the banana as a food for humans are equally mistaken; for while the banana is rich in starch and sugar, and while it has undoubted

food value, it can never become a staple article of diet for the average individual.

If taken raw, in a slightly under-ripe state, as mostly it is the custom to eat bananas, the uncooked starch is very difficult to digest. If over-ripe the fermentative processes already set up are likely to continue in the digestive tract, in which there is already an excessive amount of fermentation.

Baking the banana kills fermentation, helps to break up the starch granules, and increases the digestibility of the fruit; but not many people care for the banana in the pasty condition which baking usually produces.

The Mark of the Strawberry

There are any number of individuals to whom strawberries, no matter how ripe they may be, or how carefully washed, are a source of rank poison, producing rashes and irritation of the skin, swelling of the lips and tongue, or even pain in the joints.

This phenomenon is observed even when the berry is disguised in confectionery, pastries or jams; so that the objectionable features of the berries are not due, as many claim, to molds, bacteria, or the presence of insect parasites.

With some this idiosyncrasy extends even to melons, prunes, grapefruit and oranges, apricots, peaches and plums; and many are immediate victims of a gas attack following the eating of even the smallest particle of raw apple.

Picking the Wrong Vegetable

There is hardly a person who is not himself affected, or who does not know of someone who is affected, by various of the vegetables — particularly onions, beets, radishes, asparagus, spinach, corn, cucumbers, sage, parsley, string beans, turnips, cauliflower or cabbage.

Some of these vegetables, of course, are objectionable by reason of the tough, indigestible cellulose of which they are largely composed. Others, as for instance, the onion, are taboo by reason of the volatile oils they contain. Indeed, it is not at all unusual to see cases of gastritis, or even acute colitis, excited by eating two or three boiled onions, or by indulging in a chop suey banquet.

Upon general principles of common sense and dietary rationality, it is an excellent practice to avoid the use of any food which makes its exit from the body chiefly as wind, and

contributes little or nothing to the nutrition while so doing.

Then there are people to whom fish or fish roe, lobsters, clams, oysters, crabs, and cockles, even in their freshest state, are on the index expurgatorius; for their use is followed almost invariably by symptoms of ptomaine poisoning, or by a most distressing nettle-rash.

The Shell-Fish Voodoo

One reason, probably, why the mussel, found in such profusion all along our shores, is not more generally employed as an article of food, is because of the frequency with which it excites digestive disturbances in susceptible individuals.

The poisonous element is supposed to reside most profusely in the byssus, the "beard," of the mollusc, but to many individuals *any* part of the animal, even the essence taken in the form of broth, is equally objectionable.

These are facts, discreetly to be reckoned with in the important matter of dealing with the diet. Diet reformers and others, attracted more strongly by theories than by facts, may ignore them, if they choose; but if they do, their crime be on their own heads; for if there is any virtue at all in common sense, the ra-

tionality of abstaining from the hurtful would appear to be an indication of a goodly amount of it.

CHAPTER IX

HOW UNDER-NUTRITION INVITES DISEASE.

There is no one fact in medicine more clearly demonstrated and more definitely proved than that our immunity against disease of every kind depends upon the formation and the composition of the blood, and that chronically under-fed individuals are peculiarly susceptible to contagious diseases.

The great epidemics of history, as a rule, have followed almost invariably a period of famine. Or they have gained their foothold after a course of diet in which — as with the severe epidemics of influenza and pneumonia, which swept the world during the latter years of the Great War — the populations were forced to sustain themselves on food absolutely lacking in some of the vital elements necessary for proper nutrition.

We know, beyond the question of a doubt, that the poor, in whom the matter of adequate nourishment is a serious if not an insurmount-

able problem, are much more liable to a disease like tuberculosis, for instance, than are those who are able to buy immunity through a more liberal and nutritious diet.

Tuberculosis, the most serious of all the wasting diseases, is, in the light of these findings, no longer regarded as an inherited disease; for it is now generally admitted that it must be acquired after birth.

Tuberculosis Acquired But Not Inherited

The child may be born with a low chemico-nutritive quality or capacity, and its power to resist germ infection will, as a consequence, be very slight. This, however, does not necessarily mean that the child will ultimately become tuberculous. It simply indicates that such a subject has a strong predisposition to become easily infected by the germs of tuberculosis. The nutritive activity of such a subject is in an abnormal condition, so that a suitable soil for the growth of the germs is readily produced by errors of diet, or by a diet deficient in protein — the true building material, and the only material of which tissue can be reconstructed.

Slight causes may then produce a break in the continuity of the integument, or mucous membrane, thus enabling the germs to gain

access to the system at a time when it lacks the nutritive activity to resist their damaging effects. When this has been accomplished, the individual may be truly said to have tuberculosis. But not before. This same thing is true of every other infectious disease, no matter what its nature.

Maintain Vital Resistance by Food

As the lowering of the chemico-physiological forces plays such a large part in inviting disease, and as errors in diet, or deficient diet, is so largely responsible for the deteriorated condition of the system, we are justified in assuming that the predisposition toward tuberculosis, or other wasting disease, can be bred and fed into a family. On the other hand, the same predisposition to tuberculosis and other diseases can be bred or fed *out* of a family.

The Responsibility of Parents

If the parents are of reasonably sound habit, if they are so placed in life that they can live under proper hygienic conditions, and if they confine their diet to food that is plain and easily digested, yet highly nutritious in quality, other things being equal, their offspring will be possessed of a higher chemico-nutritive vitality than when these

conditions are reversed. The child will have a high resistance, not only against tuberculosis, but against all forms of infection.

Therefore, it devolves upon physicians, as guardians of the public health, to try in every possible way to educate human beings to be more careful in the selection of their life-partners.

Theoretically, both parents should be examined by a competent physician before being able to close the final contract. If such rules — which are carefully followed in the mating of pigs and cows — were applied to the mating of human beings, one great factor in the predisposition to disease would be at once removed.

When man is more universally mated in accordance with these ideal standards, the problem will be partly solved. Yet it would still be necessary to exercise the greatest care in the selection of a proper diet, and in the establishing of perfect sanitary surroundings.

This is especially true as regards the mother during the child-bearing period of her life, if strong and healthy children are to be produced. Yet little thought is given to this important question. Consequently too many children are brought into the world with en-

feebled constitutions, when they might, with little care on the part of the parents, have been born strong and robust.

The practical condition, however, with which physicians have to contend is the management of children or young adults that have been born of unwisely mated parents, or else with children of women, primarily healthy, who have been poorly fed, or overworked, or compelled to live in unsanitary surroundings during the child-bearing period.

The Practical Aspects of the Matter

In either case the offspring is likely to be brought into the world in a low state of chemico-physiologic activity. Yet if we study nature closely, it becomes apparent that the nutritive vitality of the infant before birth is, as a rule, likely to be conserved at the expense of the mother's nutrition.

Thus it not infrequently happens, as was demonstrated in the prize baby contests held in this city a few years ago, that a fairly healthy child is produced by a weak, enfeebled mother. In such instances the mother certainly is not a fit subject to nurse her offspring. If allowed to do so at all, she should suckle her child for only a brief space of time.

During the child-bearing period the mother

should be kept upon a well-regulated mixed diet — one in which the animal proteins predominate, as this class of proteid always yields the largest nutritive returns with the smallest expenditure of digestive and assimilative energy.

Mothers Need Plenty of Animal Food

This provided for, the mother and child, assuming that the hygienic conditions are good, will develop and maintain the highest possible nutritive standards. There will be produced, also, the greatest power on the part of the system to resist infection of all kinds, including the tubercular. The mother will, under such conditions, probably have a good supply of milk, of a rich quality.

Under these circumstances, and no other, the mother is fit to nurse her child. The nursing period, however, should never be too long extended. For it is now well established that milk contains too low a percentage of nucleo-albumin to enable it to produce the best quality of blood.

But Don't Nurse the Baby Too Long

Therefore, a protracted nursing period has a tendency to develop an anemic child. This is one of the strongest of all arguments

against the long-continued use of milk to the exclusion of other food-stuff.

When the mother is not physiologically capable of properly nursing her baby, or when the time has arrived when the child should be weaned, cow's milk should be substituted for the mother's milk, rather than some one or other of the innumerable artificial foods — for all of which the claim is made that they are far superior to those that are produced in and by the laboratory of nature.

A child that cannot be made to thrive upon a good quality of cow's milk, properly pasteurized and diluted, or to which a suitable quantity of albumin water or barley water has also been added, stands a very good chance of sometime becoming a subject for tubercular infection.

Children Also Need Animal Food

As the child advances in age, the diet must be enlarged by the addition of soups and beef-broths; then by the more solid food-stuffs, such as eggs, meats, bread and butter, and a moderate quantity of vegetable food, judiciously selected.

It should always be borne in mind, in this connection, that the animal proteid is the most economical to the system, and that when

the quantity is properly adjusted, it will, if combined with the limited use of the vegetable class of food-stuffs, invariably yield the highest nutritive value attainable.

The same rigid rules regulating the diet, both as regards quantity and quality, should be maintained throughout life. Especially should they be maintained during those periods of most rapid growth, when the largest amounts of nourishing substances are required by the system. Indeed, a vegetable diet, or a diet in which the albumin is reduced to a minimum, may, particularly during the years of puberty, have an absolutely murderous effect.

Remember always that food is essential to growth, and that to properly maintain body heat, rebuild the worn-out cells, prevent undernutrition, and conserve the body from the attacks of the myriads of microbes that day and night await only a favorable opportunity to attack the tissues, food is required.

When, as has been disclosed by the investigations of the American Open Air School Journal and by other authorities, children are under-nourished because of the straitened financial condition of their parents, the problem becomes even more complicated.

But this is a subject for the sociologist and the economist, rather than the dietitian. The physician can only point out what is required to be done, not the means for doing it.

If only it were possible, however, even to set upon the right track those who are financially able to *stay* on this track, much might be accomplished; for tuberculosis and wasting diseases, together with the present high predisposition to contract infectious diseases, might be largely bred and fed out of the human species.

This would be something well worth accomplishing.

CHAPTER X

THE CRIMES OF COOKS

The traditional idea about what constitutes good cooking is about on a par with the answer of a pupil in the biology class, who said a lobster "was a red animal that walked backwards." The genial professor agreed that this statement was correct — with the trifling exceptions that a lobster was not an animal, but a shell-fish; that it wasn't red until it was boiled; and that it did not walk backwards, but sideways.

This measures up pretty well with cooking in general, especially Mother's cooking. We used to like Mother's cooking. With our omnivorous appetites, and our tremendous oxidizing capacity, we might, as children, have liked anybody's cooking.

Mother Really Only an Amateur

As a matter of fact the mothers of the present generation, and of the generation immediately preceding the present generation, were really novices in the art of cooking, and also in

their knowledge as to what constituted food values and a balanced diet.

This explains why only three out of eight hundred and forty-six school children, examined in a representative Cleveland school, were free from dental disease of one kind or another; and why, of ninety thousand children examined in Chicago, 95% were in need of dental treatment.

The reason is obvious. For one thing the average mother insists upon having, and feeding to her family, only the whitest of white flour, from which every particle of tooth and bone building mineral has been removed.

She feeds her family on batter cakes, griddle cakes, pies, and other delectable foods fried and baked in grease, which substance permeates the starch granules and coats them over with a layer of indigestible fat.

She frequently mixes sugar into the mess, and over this she and her family pour an additional amount of the sap of the sugar cane, which has been boiled down and refined, making a highly concentrated and dangerous gastric and intestinal irritant.

On state occasions she will make up a batch of stuff which is fried in a deep kettle full of

boiling hog's grease, thoroughly insuring the indigestibility of the starch granule.

When sufficiently cooled these doughnuts will be treated to another dose of powdered sugar, still further to increase their trouble-making proclivities. These "sinkers," as they are called by the élite, are a favorite diversion in the American Home, and at the American Quick Lunch Counter. Incidentally, they served valiantly, during the late trouble in Europe, to make our soldiers forget for a time the horrors of war.

The Sinker of Song and Story

Notwithstanding their wide popularity, they are among the most pernicious and unwholesome foods that have ever been inflicted upon a trusting populace. They have caused, and are causing, more digestive disturbances than any other one article of food eaten in America — with the possible exception of the so-called "batter cakes" — which are lumps of raw dough, heated through for a few moments, and browned or burned on the outside.

These semi-raw lumps of indigestible starch are in a class by themselves as specimens of what a food should *not* be. They may be a joy while eating, and for about a half an hour or so afterwards. Nevertheless, it is highly

probable that they, together with a lot of other maltreated food, have, in the past, driven more men to drink than all other forms of trouble combined.

Then there is the frying-pan, or skillet, elevated to a post of honor in most American homes. This institution is also a prime trouble-breeder, from the fact that the majority of women fail to use a fire under it sufficiently hot to sear over the meat during the process of frying, and so retain the savory juices.

Toughened Meat

This is partly due to the fact that lard, butter and other animal fats are used in cooking. These animal fats have a low burning point. Hence, if used at a temperature that would adequately cook the meat, fish, or other food, they have a faculty of proclaiming to the entire neighborhood just what the family is going to have for dinner, to say nothing of the fact that the meat being prepared is toughened and rendered almost indigestible by its protracted seance in the frying-pan.

If broiling is not practicable, it is possible, through the use of corn oil, olive oil, or some other vegetable oil — capable of being heated to 600° or more before the burning point is reached — to greatly help in taking the teeth

out of the frying pan, and at the same time serve to make the food more palatable and digestible.

It would also be infinitely better if we in America would learn to steam vegetables, instead of boiling them in water and then throwing the water away; for this practice causes the loss of many of the nutrient salts, which are dissolved out of the vegetables in the process of cooking.

Steam the Vegetables

It would be much better to let the vegetables simmer in a little water, then steam in their own juices, and serve them with all these juices. Or they could be cooked in closed vessels, as with the admirable method utilized in the principle of the "fireless cooker," now in general use.

Or they could be cooked in closed vessels on the "double-boiler" plan. The aroma is thus retained, the food has a better taste, and the nutrient salts are kept, instead of being poured down the kitchen sink.

In this slower form of cooking vegetables, the starch granules are given an opportunity to burst open naturally by the heat; whereas, if the heat is too great, as in intensive boiling, the starch granules may shrivel up, while the

outer covering of cellulose may remain intact, thereby increasing the indigestibility of the cereal or vegetable.

It is just as easy to cook scientifically as it is to spoil food unscientifically; but in order to do so, the fundamentals of cooking must be comprehended, and judiciously followed.

CHAPTER XI

THE EVIL OF FRUIT

If there is any one fact of which I am thoroughly convinced it is that the eating of fruit, especially in conjunction with the meals, as is commonly practiced in this country, is one of the most pernicious and reprehensible of all dietetic follies.

First, because the taking of fruit acid with other foods has a tendency to inhibit the normal secretion of hydrochloric acid — indispensable to the proper peptonizing of the albuminous foods.

Secondly, because when fruit acid is used at the same time that starch and sugar are taken into the stomach, it excites fermentation of the starches and sugars, thereby causing the production of an excessive amount of lactic acid.

The result is that the stomach contents, after an interval in which, normally, peptic digestion should be well on towards completion, consists of a

Too Much Acid

mass of pabulum, insufficiently peptonized, and excessively acid, from the acids of starch and sugar fermentation.

This mass is passed through the pylorus into the small intestine. The extra acidity of the material makes it difficult for the alkaline juices of the intestine to neutralize the food pabulum, so that intestinal digestion may proceed.

The consequence is that the heat and moisture of the small intestine unite with the fermentative processes to break down the substances. This favors the decomposition of the albuminous compounds, and the development of alkaloids of putrefaction — indol, skatol, indoxyl, and other dangerous compounds — the absorption of which into the blood stream produces all the protean symptoms of toxic irritation.

It must not be forgotten that the acid of the fruit and the starch of the vegetable stimulate fundamentally different reactions in the digestive secretions. Indeed, the presence of fruit acid in the mouth has frequently been observed to inhibit the flow of the salivary secretions.

Acid Fruit Also Stops the Flow of Saliva

Deprived of the digestive action of the

saliva, the starch, in its non-dextrinated state, is passed into the stomach, in which, as we have seen, there is no provision for its digestion; it remains unacted upon except by bacterial processes of fermentation. All of which leads to putrefaction, and the disorders caused by decomposition.

So headaches, neuralgia, neuritis, rheumatism, sciatica, lumbago, skin eruptions, even diabetes and Bright's disease, have their origin in nothing more or less complex than the injudicious use of fruit and fruit acids.

All Sorts of Trouble Produced by Fruit

If fruit is to be used at all — in most diseased conditions it is well to eliminate it entirely — it should be taken in the form of a fruit breakfast, and never at a time when there is other food in the stomach.

Even the much lauded laxative action of fruit may be a double-edged sword, if the perpetration of an Irish bull may be condoned; for it is the irritation which arises from abnormal fermentation of food-stuffs in the alimentary canal, and the disturbed action in the transmutations of the food-stuffs, that make fruits laxative in their nature.

Laxative Effect of Fruit Due to Irritation

Many of the fruits in the market are

plucked before they have had an opportunity to fully ripen. In their raw state they are often loaded with microörganisms. Or, at their very best, they are in a state of partial decomposition when introduced into the alimentary canal. Therefore fruits should be avoided as laxative agents.

Fruits are also the head and front of all offenders in the production of intestinal indigestion, causing pain and belching of gas, together with distention of the abdominal cavity.

Intestinal Indigestion Frequently Due to Fruit

This distention often crowds up the diaphragm, which, together with the reflex disturbances in the nervous system, causes difficulty in breathing — the "smothering sensations" so often complained of by dyspeptics — and rapid and irregular heart action.

Fruit is one of the most certain of all the uric-acid producing foods we can take into the system. In fact, in the treatment of the uric-acid class of cases — and of the kidney and other conditions which usually complicate these cases — it is absolutely necessary to interdict fruit, both fresh and cooked, if we are to get the desired results.

Stop Fruit and Clean Up Uric Acid and Bright's Disease

So opposed is this dictum to all accepted teachings on the subject, that it is sometimes extremely difficult to secure the coöperation of many patients. Yet, I am absolutely certain, in an experience covering thousands of cases, that we cannot clear up these conditions so long as the patient persists in the use of fruit.

A very interesting case occurs to me in this connection, which may help illustrate and emphasize this important matter. Many years ago a patient presented himself in a somewhat perturbed frame of mind. He had just been denied insurance by the examiners on the grounds that his urine was rather plentifully supplied with hyaline casts, together with a fair amount of albumin.

Now, very frequently, in cases of over-production of uric acid, hyaline and granular casts may be found in the urine, and possibly a trace of albumin. This does not necessarily mean, however, that this individual has kidney lesion. Although, if the correction of the condition is neglected for some time, there is an excellent chance that he may develop serious trouble.

The patient referred to certainly did not look as though he had Bright's disease. He

weighed 260 or 270 pounds, the picture of health. However, he had been told that he had Bright's — which didn't tend to improve his mental condition any — and that in all probability he would not live very long.

A Uric Acid Factory From Improper Eating

I examined his urine, found a diminished urea output — which showed faulty oxidation of the proteids — and an enormous over-production of uric acid; also a liberal supply of the hyaline casts with which the Insurance Examiner had so thoroughly scared him.

This man had come from out West, where he had always led an active life. The business which had brought him to New York was the management of a branch office. Laudably desiring, as every good business man does, to make the venture a success, he "pitched into" the work with all his might.

He secured a house as near as possible to the subway station, so as to lose no time in walking to and from his business. He worked hard, and, while getting no outdoor exercise, still ate heartily.

He soon fell into this condition of over-production of uric acid, and developed the disquieting urinary symptoms.

His condition was fully explained to him, but he was told that, notwithstanding the verdict of the Insurance Examiners, he could get thoroughly well, if he really wanted to get well, and if he would be willing to coöperate with his physician. Within ten days after he stopped the use of fruit, and started to live a little more in conformity with hygienic law, the over-production of uric acid ceased, and the man recovered completely.

A few years later this same patient relapsed into his former state. He persisted in over-producing uric acid, no matter what was done for him in a medical way.

Looking Upon the Grapes When They Were Ripe on the Vine

I supposed he was obeying the rules previously laid down, and his failure to respond puzzled me greatly. One day, however, he called me over the telephone, saying that he did not know but "perhaps I have been eating too many grapes this Fall."

It appears that he had a fine arbor of grapes, a fruit of which he was particularly fond, and had partaken of them rather freely. The grapes had thrown his digestive processes out of balance, and no matter what was done they refused to come into line while he continued his grape-eating.

He was given a lecture which profited him exceedingly. He stopped eating fruit absolutely and made a rapid and uneventful recovery. This was more than ten years ago, and the man, having learned his lesson, and continuing to abstain from fruit, is still free from Bright's, and, if anything, is physically even more fit than he was years ago.

I have seen this happen over and over again, and during the past two decades have accomplished such results so often that my treatment of similar cases is now the merest routine. The surprising thing to me is that other physicians have not yet generally adopted the same system, and put it into practice.

It isn't anything that has to be accepted on faith, or that requires patient observation to determine. The test-tube, the microscope, and the patient's symptoms are enough, and sometimes even forty-eight hours is sufficiently long to show distinct improvement.

Fruit Is Bad Medicine

In any event, there is not the slightest doubt in my mind but that when fruit is taken into the alimentary canal of the majority of individuals, especially if it be taken in conjunction with a meal, it starts up an irritation of the canal,

which excites putrefactive disintegration of the proteid elements in the food, deviates the normal processes, and causes an over-production of uric acid.

It is therefore absolutely necessary to prohibit the use of all fruit, to patients of every conceivable kind, and even to many normal individuals who wish to remain normal, except as I have elsewhere noted.

And the cooked fruits are worse than the raw ones, because they contain the same material that the raw ones do, plus a considerable amount of cane sugar, which latter substance the individual does not need. If a lot of extraneous sugar is introduced into the alimentary canal, the digestive apparatus has to convert it into glucose before it can be absorbed and assimilated. When this occurs a large amount of easily assimilated carbohydrate material is thrown into the system. This exhausts the available oxygen supply, and this, in turn, is naturally followed by an incomplete oxidation of the proteid molecule and an excessive output of uric acid.

So with the use of fruit, except for an occasional "fruit breakfast," there is only one safe course to follow; and that is to "cut it out" not as the dog's tail was cut off, a

half an inch at a time — but drastically, completely, and permanently. There is no safe middle course.

CHAPTER XII

SWEETS AS LIFE-SHORTENERS

Next to worrying about the things that never happen the most ridiculous thing in the world is to worry about the lack of things that only help to kill us if they do happen.

Take as an example our harassed concern over the "sugar shortage" and the "high price of sugar." By every possible expedient we seek ways and means to increase the supply of this delectable stuff, when as a matter of fact by every law of health and hygiene, the less sugar we used, the better off we'd be; for there is probably no one dietetic vice that exercises a more deleterious action upon the organs of digestion, and upon various other of the vital structures, than does the inordinate consumption of sugar.

Based upon statistics showing the tremendous increase of diabetes, Bright's disease, rheumatism, arterio-sclerosis, and other diseases having their frequent origin in under-oxidation, our national orgy of sugar eating is nothing short of suicidal.

The World's Champion Sugar Drunkards

No other nation in the world is so addicted to sugar as we are, and no other nation suffers from its ravages as we do. Perhaps not even the moderate use of alcohol works a greater evil upon the vital organs.

The figures on this subject, if their significance were only realized, should occasion genuine alarm. The Department of Commerce has compiled these figures, showing that the annual consumption of cane sugar in the United States averages eighty-one pounds for every man, woman and child in the country.

These figures cover the use of refined sugars only, taking no account of the immense quantity of sugar used in the form of glucose candies, corn and table syrup made of glucose, and refiner's syrup.

This means that, combining all the various forms of sugar used, there must be an average annual consumption of refined sugars in this country of one hundred and fifty pounds per person.

In contrast with this national debauch the Department of Commerce demonstrates that in Germany the amount consumed is only six-

teen pounds per person; in France twenty-eight pounds; in Great Britain thirty pounds.

Refined sugar, it must be remembered, yields only heat to the body, plus carbonic acid, a depressive poison. As now manufactured, refined sugar contains none of the salts, bio-chemic agents, vitamines, or repair or building material essential to the maintenance of normal health.

Sugar Yields Only Heat

The end-products of its combustion are essentially acids. When these end-products are added to the overload of acid-producing foods in the form of refined flours and refined cereals, with which we are already bombarding our systems, it is obvious that the accumulated under-oxidation products must have a pernicious effect in lowering resistance to anemia, pneumonia, tuberculosis, diabetes, nephritis, heart-disease, and disease of the blood vessels.

Remember that sugar must be changed in the alimentary canal into glucose before it can be absorbed and assimilated; and that when this occurs the easily assimilated carbohydrate material exhausts the available oxygen supply of the system.

This is followed naturally by incomplete

oxidation of the proteid molecule, and by an excessive over-production of uric acid and fat.

How the System Burns Food

The normal temperature of the body is maintained by a slow form of oxidation of certain food-stuffs, taken into the alimentary tract, acted upon by the oxygen carried in the hemoglobin of the red corpuscles of the blood.

The hemoglobin carries this oxygen to the tissues, wherever needed, and removes from the tissues their waste product, carbon dioxide.

It has been definitely established that the blood cannot carry sugar in solution in excess of one-tenth of one per cent of the total volume of the blood. To introduce into the system sugar in excess of this amount means putting extra work upon vital organs that, sooner or later, will become disorganized in their functions under the strain.

For the system simply cannot use more sugar than this fixed limit. Any amount in addition to this merely constitutes a source of irritation, to be gotten rid of at the earliest opportunity.

The pancreas, which is the governor-wheel

of the sugar-consuming function of the body, and which sets up barriers against admitting into the blood currents larger quantities of sugar than the system has use for, throws up both hands in despair at the task of coping with this overload.

The kidneys, liver, lungs and skin are then called upon for extra efforts in elimination in order to get rid of the waste. The result, in scores of thousands of instances, is a breakdown in some of the vital organs.

Sugar a Slow Poison to a Rheumatic

No patient suffering from rheumatism, diabetes, Bright's disease, or hardening of the arteries, should put this extra strain of work upon these abused organs. He cannot afford to increase his acid-forming tendencies by one iota — if he is desirous of regaining normal health — or of preserving the health that should be normal to him.

So there is absolutely nothing else for him to do except to materially curtail the amount of sugar he uses. The issue is clear cut and obvious.

Candy, syrups, soda waters, frosted cakes, preserves and everything sweet, must be eliminated entirely, or cut down to a minimum.

The same objection that applies to the exces-

sive use of sugar applies equally to starches, which must be changed into a sugar form before they can be assimilated.

Starches Are Almost as Bad as Sugar

People who eat heartily of super-starchy foods also exhaust their available oxygen supply before the more difficult task of oxidizing the proteid is accomplished.

For this reason I have found it necessary to exclude potato from the dietary, not because it is indigestible, but because it is too digestible. For the starch of the potato is probably the most easily digested of all starchy forms. This is just where the trouble arises.

The potato is so easily assimilated that it uses up most of the oxygen, and there is not enough left to oxidize sufficiently the proteid molecules. I have any number of patients who, if they eat potatoes at the night meal, will have an over-production of uric acid the next day.

Potatoes Rob the System of Oxygen

Another pertinent reason for eliminating the potato from the dietary is that many people who eat potatoes want them three times a day, and they want them fried — which is piling Ossa upon Pelion. Fried potatoes only add to the diet an extra amount of fat, which

also has to be oxidized. This naturally increases the tendency to "starchy indigestion."

The desirable course in this condition is not so much to augment the digestion of the sugars and starches as to cut down the amount of starch and sugar introduced into the alimentary canal, and *to select only those forms which are most slowly digested.*

The form of starch which is most slowly transmuted and distributed is the starch of rice or macaroni. These are the very best and most adaptable forms of the starch compound we can use.

Rice and Macaroni the Best Starch and Sugar Sources

Therefore, in my dietary, I am in the habit of substituting rice and macaroni for potato. Many patients do not like either of these foods, but after a while they find they can secure better health by using them.

Another thing; most people have the idea that macaroni is purely a starch compound, whereas it really is made from wheat flour from which the starch has been largely eliminated and the gluten left. It is therefore a vegetable proteid compound.

Macaroni Also a Good Meat Food

This matter of sugar and starch excess is

one of the most important in the whole field of dietetics, and one which is the least understood, even by physicians.

Their proper regulation is absolutely essential, if the health of any patient suffering from any of the "under-oxidation" diseases is to be restored. Their abuse is more liable than any or all other causes combined to result in under-oxidation diseases.

Therefore, the individual has it in his own power to be or not to be an invalid — organically crippled by his own dietetic indiscretions.

CHAPTER XIII

THE IDEAL DIET

It is almost inconceivable to think that even well-equipped physicians have not yet learned that what we eat and how we get rid of the residue has more to do with our health and the length of our lives than anything else we could ever do, or leave undone.

We pity poor old Carlyle, a crabbed, grumbling grouch all his life long. Yet many of us — even physicians — eat almost as foolishly as he did. We wonder why a great philosopher like Herbert Spencer could not have known that it was his ill-balanced diet that starved his nerves and made him the frail, delicate man he was, capable of working only a few hours at a time.

Yet thousands of men and women suffer constantly from headaches and neuralgia, and all forms of under-oxidation symptoms. They are nervous and depressed. They haven't known a decent night's sleep since their boyhood or girlhood days.

We Eat Our Way Into Trouble

The reason for all this is that not one in a thousand of us knows the chemistry of food in relation to the chemistry of the body. We do not realize that foods, perfectly good in themselves, may be rank poisons when combined with other foods in a way to produce fermentation.

We know what would happen to a glass of warm milk if we put grape juice, or a little lemonade, in it and left it on the radiator for a couple of hours.

Developing Technic in Fermentation

But we never stop to think that the same sort of fermentation that may take place *outside* the body, may and does take place with even greater facility *inside* the body. The natural heat and moisture of the alimentary tract and the billions of germs that make the food canal their domicile furnish a combination for evil that would satisfy even the most devoted disciple of Machiavelli or Mephisto.

Yet hundreds of thousands of people will indiscriminately mix up acids and sugars and cereals and protein, and then wonder why they are always full of gas, and bedeviled with diarrhea; and why they develop every

conceivable form of under-oxidation disorder that there is to develop.

Similarly with the foolish devotion to food fads, which are as far removed from an adequate diet as mental balance is from Bedlam.

There is probably little comfort or soul solace for the hay eater, the fruit faddist, or the gentleman who thinks he can live on nuts, or raw food, or any of the weird viands that some individuals inflict upon themselves, in what I have found, by long experience, to be an ideal diet for the sick, and an equally ideal diet, perhaps slightly modified in some respects, for the healthy — to prevent them from becoming sick.

What to Eat

This may seem extremely radical and revolutionary to many. But it may mean robust health and exuberant happiness to anyone who is sufficiently broad minded to realize and to act upon the principle that Nature gave a cow a multiplicity of stomachs and a couple of hundred feet, more or less, of intestines, in order that the cow might use all her spare time in converting hay into forms of food that humans can readily use — without at the same time giving all their energy to digesting food of low nutritive value.

It is this lamentable tendency of Americans to live largely upon vegetables and cereals, and upon rich and highly seasoned viands, that is the foundation of fully nine-tenths of all our diseased conditions, both acute and chronic.

The Fermenting Fruit

As we have seen in Chapter XI, the excessive use of artificially ripened fruits — fruits which are plucked green, and which undergo a modified process of rotting before being eaten — is another of the chief errors sedulously practiced by humanity in connection with a badly selected diet.

Indeed, even the much lauded laxative effect of fruit is largely due to the excessive fermentation it produces in the alimentary canal, and not to a natural stimulation of an increased flow of bile, and an increased production of glycerine and soap in the alimentary canal.

Hence, while the individual is deluded with the idea that everything is going well with him, in a physical sense, because he is daily getting rid of intestinal debris, he is nevertheless developing conditions of putrefactive intestinal fermentation which rise to plague him later.

The system is constantly generating toxic products, which are being carried through the circulation; so instead of getting their full quota of nutritive pabulum, these fermentation-encouraging individuals — and there are millions of them everywhere—are being slowly but surely poisoned by self-generated toxins.

The Toxin-Poisoned

There is only one way successfully to treat this class of cases, and this is by radically correcting their dietetic faults. This is not difficult to do, provided only that the individual has sufficient moral stamina to follow a rational restricted diet.

THE IDEAL MIXED DIET

For Breakfast — Two eggs, eight ounces of milk, two ounces of whole wheat bread and butter.

For the Mid-day Meal — From one-quarter to one-half pound of beefsteak, eight ounces of milk, three ounces of whole wheat bread and butter.

For the Night Meal — From one-quarter to one-half pound of beefsteak, eight ounces of milk, two ounces of whole wheat bread and butter.

At Bed Time — Eight ounces of milk.

Beefsteak is taken as the working standard among the meats, as it is the most easily digested of all food-stuffs. Under the heading of meat, however, is included lamb, mutton, occasionally veal; all fish, including the shell forms, such as oysters, clams, lobsters, and crabs; poultry and game of all kinds.

The meats are to be broiled, boiled, or baked.

The fish is to be boiled or baked.

The oysters and clams to be eaten raw or stewed. The lobsters boiled or broiled.

A little crisp bacon may be taken from time to time, also ham and corned beef, *without cabbage.*

Eggs may be taken boiled, poached, or scrambled.

Milk is best warm, or with a little lime water added.

Wheat bread is taken as the standard because it is the most easily and perfectly digested. It should be at least twenty-four hours old or toasted. Rye, graham, zwieback, or health-food breads may at times be substituted.

Weak coffee, without milk or sugar, or with a dash of milk, may be taken freely as a beverage. Coffee taken clear aids digestion, but

with milk and sugar often disturbs digestion.

Additions to Enlarge the Specified Diet.

There may be eaten in the line of vegetables, string beans, green peas, lima beans, spinach, lettuce, asparagus, and cauliflower. These are chosen because they are the least likely to excite intestinal fermentation of an abnormal character. They should be well cooked. Only a limited amount of one vegetable at a meal should be eaten.

When a vegetable is taken with the meal, there should be a reduction in the quantity of meat or milk, as given in the diet table, because allowance must be made for the fact that vegetables also contain protein, and protein, or any other food form, for that matter, if used in excess of the normal requirements of the individual, constitutes only just that much more waste matter to be gotten rid of.

To the foregoing items of diet may be added boiled rice and macaroni, and occasionally boiled beets, carrots and squash.

FOOD-STUFFS TO BE AVOIDED

All fruits, whether cooked or raw, except as taken between meals, should be tabooed;

also all cereals and breakfast foods, nuts, sweets and pastries of all kinds, potatoes in all forms, onions, tomatoes, turnips, parsnips, carrots, celery, radishes, cabbage, corn, egg-plant and oyster-plant.

Also pork in all forms, except as before stated.

Rich gravies, and all forms of soup are excluded. Soups, first, because they tend to destroy the keen appetite which makes possible the eating of plain and substantial food; second, because they destroy the appetite and stimulate a strong desire for the entrements and highly seasoned foods; and, third, because the mixed cream and rich stock soups tend to excite undue and putrefactive fermentation in the intestine. Rich gravies, because they disturb digestion.

Rich Gravies and Soups Produce Fermentation

Potatoes, that are so commonly used, are excluded for three reasons: first, because they have a high percentage of starch and a low percentage of proteid; second, because they are apt to be taken three times daily, and are so often fried; third and chiefly, because of the ease with which the starch contained in the potato is digested and assimilated within the system. In consequence of this rapid

utilization of the potato starch, which yields to the animal economy only heat, the oxygenating capacity of the system is exceeded, and there is not a sufficient amount of oxygen left within the body to perfectly oxidize and assimilate the proteid constituents of the food. This must be accomplished if a perfect state of health is to be maintained.

So in the repair of disease conditions, it is even more imperative than it is in health that the proteids shall be perfectly oxidized and assimilated. Hence the absolute necessity to exclude the potatoes and food products enumerated.

Don't Forget to Cut Out the Fruit

Above all, eliminate the use of fruit of any kind, whether cooked or raw, with meals. For nothing that can be taken into the alimentary tract is so likely to excite putrefactive fermentation and to prevent the perfect digestion and assimilation of the proteid elements of the food, as is fruit.

No one point in connection with a rational diet is so difficult to enforce as is the correction of this vice of fruit eating with meals.

A word or two concerning the proper use of milk may not be amiss here, as many people do not seem to understand this food form, or

Right Way to Use Milk

the means of avoiding harm from its use.

It is obvious that inasmuch as the milk does not get much chance to excite the flow of saliva, the digestive juices cannot be greatly stimulated by it. Therefore it is always well in taking milk to hold it in the mouth a little while, and work it around with the tongue before swallowing it. This will serve to stimulate the flow of saliva, which, being mixed with the milk, retards the rapid formation of the curd. This favors the development of smaller and more flocculent curds, and renders the milk much more easily digested.

Then, too, the casein, or solid substance of the milk, must be precipitated before the hydrochloric acid and pepsin can act upon it. In the secretions of the stomach there are two substances capable of precipitating this casein, hydrochloric acid and rennet, a special milk-curdling ferment. In the event that there is a lack of rennet in the stomach, as frequently happens, the casein is precipitated by the hydrochloric acid; it will then be solidified in hard, tough, leathery lumps. But when acted upon by the milk-curdling ferment, rennet, the casein is thrown down in fine,

feathery flakes, presenting a large surface, easily permeated by the pepsin.

Drink Warm Milk, and Don't Drink It With Your Meals

It is a fact not generally known that when milk, or any other food-stuff, is taken into the system when cold, it tends to excite a free flow of hydrochloric acid and a decreased flow of the milk ferment, rennet. The reverse action takes place when milk or any other food-stuff is taken warm.

It must be remembered that milk, taken after a hearty meal, as many people are accustomed to taking it, comes in contact with an abundance of hydrochloric acid, excited by the presence of the meal. The milk is then likely, because of the presence of hydrochloric acid in abundance, to solidify in tough, hard curds, difficult to digest.

Therefore, to have the milk receive the most favorable digestive attention, it should not be taken cold, or with or after a full meal, but should, on the contrary, be taken quite warm, and on an empty stomach.

The addition of either a few teaspoonfuls of lime water, or a half teaspoonful of milk of magnesia, also will prevent the rapid coagulation of the milk and favor the precipitation of the casein in this fine, feathery,

and much more easily digested form.

Lime Water or Milk of Magnesia Assists the Digestion of Milk

I am also in the habit of using dried beef bile, in doses of from two to five grains, to stimulate the flow of the milk-curdling ferment. This, in my opinion, is one of the most valuable of all digestive aids, and can be taken over any period of time without producing any other than beneficial effects.

When these various suggestions are faithfully carried out, a good variety in the dietary can be secured, and a high grade of nutrition established and maintained. Disregard of these rules will sooner or later result in diseases of one kind or another.

Such medication as is necessary to assist in correcting various digestive deficiencies must be given by the attending physician for specific conditions. My chief reliance is upon dilute hydrochloric acid, ox-bile, pancreatin, tannalbin, extract of taraxacum, extract of nux vomica, caffeine, and similar drugs, depending upon the condition which they are required to meet.

But anybody who is still alive, and who thinks more of his health than he does of tickling his palate with ticklesome foods, can

be materially improved and oftentimes entirely cured, by following this most reasonable and rational method of diet.

Experience in thousands of cases proves that it "works." Try it for yourself and see.

CHAPTER XIV

THE DEMENTED DIET OF THE BUSINESS WOMAN

Of all the dietetic crimes committed in America, there are none so flagrant and so harm-producing as those the average young business woman in this country is continually committing against herself, her future husband, and her possible children.

By the hundreds of thousands everywhere, young working women are attempting to nourish themselves upon a diet that bears no more relation to their actual food-needs than a handful of sawdust bears to a banquet.

One has but to look into the lunch boxes of these young women, or to observe them as they line up at the "quick lunch counter" for their noon-day meal, to appreciate this fact.

Training Themselves to do Without Food

The cult of the "dainty" has been established as a sort of fetich. Thin slices of demineralized white bread, with a leaf or two of lettuce, a cut of soggy pie, or a piece of anemic-looking cake is, by the vast ma-

jority of young business women, considered a fair-to-middling lunch.

Or a chocolate eclair and a glass of syrupy soda water, a double insult to a food-craving stomach, is thought to be food material sufficient to repair waste tissue, provide mineral salts and vitamines, and fuel the organic boilers for another five-hour spell at the energy-consuming typewriter!

Is it any wonder that these girls develop anemia, sallow pimply complexions, obstinate constipation, soft teeth and bones, and a tendency toward neurasthenia!

Is it any wonder that, under such a diet, they fail to develop the strong sex qualifications that are the veritable foundation stones of normal womanhood and competent wifehood!

Sexual Apathy, Incompatibility and Divorce Due to Deficient Diet

Their diet, deficient in iron, phosphorus, and the nucleo-albumins, starves their woman-natures, inhibits the normal secreting power of their ovaries, and leaves their nervous systems deficient in vital energy.

There is only one source from which red blood, vital force and energy can be manufactured, and this source is food — food rich in all the elements that go to build up perfect

bodies and virile nerves.

Food the Basis of All the Life Forces

This food is found in eggs, meat, fish, milk, whole wheat bread, and vegetables rich in iron and phosphorus. A fair amount of all these foods, as suggested in the chapter on "The Ideal Diet," will bring about, in a very short time, a complete change in the physical and mental equipment of hundreds of thousands of young women — and scores of thousands of young men, as well — who are now systematically starving themselves, and maintaining a chronic state of under-nutrition.

Try an Egg Sandwich and a Glass of Milk for Lunch

If meat seems to be "heavy" at lunch, a couple of soft boiled eggs, or an egg sandwich and a glass of milk, will furnish an excellent quality of nutriment.

Remember that a fair-sized egg contains fifteen or sixteen grains of lecithin, that indispensable glycerophosphate that goes to make up brain and nerve cells. Without lecithin our brain and nerve cells cannot properly perform their function. Indeed, many cases of nervous exhaustion have been entirely overcome by taking three to five grains of lecithin three times

daily. What is more rational than to take this phosphated substance in the form of eggs, rather than to take it in the form of pills?

Nor must it be forgotten that, in the process of digestion, the state of the mind is a very great factor. If one eats while harassed with business or other problems, the secretion of the digestive fluids is interfered with, food is not digested so well, and as a consequence, assimilation and metabolism are interfered with.

Don't Take Your Business Troubles Out to Lunch With You

A cheerful frame of mind is one of the most valuable digestive tonics anyone could possibly own.

Right here, it may be remarked, as Lorand points out, that a plentiful diet, containing sufficient eggs and other protein, invariably has a stimulating action upon the amative functions. For the heads of the spermatozoa, like the cell nuclei, consist chiefly of nucleo-proteids. Consequently, when a considerable amount of food, rich in nuclein, is absorbed in the diet, the spermatozoa become more numerous, and are more apt to exert a normal exciting effect; whereas, when the nuclein bodies are absorbed

To Stimulate Sexual Vitality

only in small numbers the spermatozoa can be formed only in inadequate amounts.

A liberal proteid diet will increase the hemoglobin ratio, also, and the ability of the blood to carry the life-giving oxygen to all the tissues and structures of the body. It will overcome the chronic constipation from which many of our young men, and especially our young women, now suffer.

It will enable them the better to do their work, with clearer heads, and an infinitely greater capacity to resist fatigue.

Working With a Clearer Head

It will build sound nerves and enhance physical endurance. It will give our girls rosy cheeks, bright eyes and clear complexions. It will provide them, as potential mothers, with the necessary lime salts and phosphates from which their children to be may be furnished with sound teeth and an adequate bony framework.

Above all else, it will increase their resistance to infectious and other diseases, and enable them to throw off the conditions that now sweep them, by the thousands, into a state of chronic invalidism, and an earlier demise.

All of which should be vitally interesting to every young man and young woman who

appreciates the advantages of sojourning in this plane of existence in the highest state of physical efficiency, and for the longest possible period of time.

CHAPTER XV

GETTING THIN BY EATING

The two most prevalent causes for obesity are over-eating and under-exercising. Most fat people are guilty of both.

Aiding and greatly abetting over-eating is the factor of eating too largely of carbohydrate food — sugars and starches — which rob the system of the oxygen normally required to oxidize the proteid molecule; also the use of alcohol, which is the most easily oxidized of all carbohydrates.

Many obese people, however, are structurally defective. They have abnormally small lungs. This restricts their aerating power, and their capacity for furnishing oxygen to the system in amounts sufficient to properly oxidize their food.

Fat People With Small Lungs

I remember one case on whom I performed an autopsy, whose lungs weighed only five and seven ounces, respectively; as against the normal twenty or twenty-two ounces they should

have weighed. It is obvious that with such an anatomical deficiency this subject could not, under any circumstances, have furnished sufficient oxygen for the reduction of the proteid molecule, and at the same time maintained the requisite number of calorie units to energize her tissue.

All such persons are very prone to develop an over-production of adipose tissue; that constitutes in them the one factor that cannot be fully overcome, and which makes the management of obesity, in many instances, so difficult and so unsatisfactory.

Add to this an over-indulgence in food and alcohol, with a lack of out-door exercise, and there will be a still further over-taxing of the oxygenating capacity of the animal economy, with its resulting fat development. This is especially true when the food consists largely of sugars and starches.

When the thyroid and the other internal secretions are at fault, helping to prevent normal metabolism, the anatomical deficiency is even more likely to cause an excessive accumulation of fat.

That obesity comes from an incomplete oxidation reduction of the proteid molecule is

now generally admitted. Just how it is produced, however, is still a mooted question.

What Produces Fat

In view of the fact that small lungs, over-indulgence in food and alcohol, and under-indulgence in exercise — together with defective internal secretions — all tend to lower the oxygenating capacity of the system, it seems highly probable that in all cases of obesity what oxygen can be supplied to the system is largely exhausted in the conversion of the fats into carbon-dioxide and water, leaving an insufficient amount of oxygen to accomplish the more difficult task of completely reducing the protein substances.

This sub-oxidation results in formation of fat out of the proteid molecules.

Consequently, there results a large over-production of fat and adipose tissue, from the incomplete oxidation of the proteids, thus producing obesity.

Heredity is also an important factor in obesity. Those who are constructed with relatively small lungs, and who make no very strenuous efforts to increase their lung capacity, or who may be born with defective internal secretions, are much more likely to

Many Born With a Fat-Forming Tendency

develop obesity than are those with normal organs. In this sense one may be said to inherit a tendency toward obesity.

To help this "too solid flesh" to melt, it is necessary to increase the lung capacity, overcoming as much as possible the anatomical defect, radically regulate the diet, and improve the internal secretions.

Getting Rid of Fat

When the anatomical deficiency is too pronounced, it cannot be overcome, and treatment will be of little avail.

Deep-breathing exercises, and all forms of exercise which tend to expand the lungs, as well as a vigorous life in the open air, will help materially, however, in most cases, to increase the lung capacity, and to provide increased oxygenating power to the system.

If the internal secretions are at fault these must also be corrected, to the end that the metabolism of food substances may be augmented.

Correct the Internal Secretions

Most frequently the deficiency lies in the amount of material secreted by the thyroid gland. In this event, a three or five grain thyroid tablet, taken before meals, gives good results. It would be well, however, not to undertake the use of thyroid extract, except

under the advice of a physician, as this substance is a highly potent principle, with immense possibility for harm if used in excessive amounts, or in conditions in which it may not be indicated.

To Drink or Not to Drink

Abstaining from water drinking has been recommended by some, on the ground that it increases the demand of the system upon the adipose tissue, in order to secure water, which is one of the products of fat-oxidation. This abstinence, they claim, forces the oxidation of fat.

Von Noorden, however, has demonstrated that water drinking never produces fat. On the contrary, water facilitates the assimilation of the nutritive substances, while at the same time stimulating a more active elimination from the bowels and kidneys, hastening thereby the excretion of products which might otherwise have a tendency to lower the oxidizing capacity of the system.

Eat Vegetables and Grow Thin

Of late years, considerable attention has been given to the undoubted value of an exclusive vegetarian diet in corpulency, a direct swing-away from the old lean meat and low carbohydrate regimen advocated

by Oertel and Ebstein, and tried with such excellent results on the plethoric Mr. Banting.

This system recognizes the now generally accepted fact that it is only from the sub-oxidation of the proteid molecule that fat can be derived. So its advocates limit the amount of proteid by giving a diet calculated to fill a person to repletion and satisfy hunger, without, at the same time, furnishing him too many calories.

There can be no question of doubt, either, but that the vegetable eater rarely over-eats, as does the meat eater. For one thing, his food has not the savor and the appetite appeal that meat foods have. Indeed, it would be very difficult to conceive of anyone gorging himself upon a diet of string beans, spinach, or green peas.

Forty Pounds Off on Vegetables

Dr. Albu, who has had much experience in this regimen for corpulency, believes that a strict vegetable diet is the easiest, safest, and surest means there is of correcting the tendency to excessive corpulency — without any harmful effects upon the health of the one seeking to reduce weight.

He kept his patients upon an exclusive diet of vegetables, eliminating, of course, the

starchy vegetables, for from four to six weeks. He then permitted them to have from one hundred and fifty to two hundred grams of lean boiled meat (preferably beef) three times a week, or even once a day.

This diet, he found, may be kept up for months without injuring the health. In Albu's experience, it protects those inclined to obesity from returning corpulence.

As soon as the patients show signs of gaining again, however, the meat is once more withheld for some weeks.

Albu records several cases in which the weight dropped nearly forty pounds in the course of a few months by the use of this diet alone; accompanied, of course, by appropriate exercise, without which satisfactory results in the treatment of obesity are extremely difficult to attain by *any* form of treatment.

Various forms of baths, particularly the sulphur baths of Mount Clemens and Hot Springs, have also been helpful in reducing excessive corpulency. Turkish baths have been of advantage to some; but they should be employed with great caution, especially if there is any circulatory disturbance present.

Baths and Massage Also Good

Massage and various forms of mechanical

exercise have also been recommended. All these measures have, in some instances, been beneficial in promoting a more active oxidation of the fat and adipose tissue.

Certain mineral waters, as Vichy and Kissingen, have been highly lauded by some. Alkaline saline waters, when they improve the digestive functions, may be of value.

But the Key-Note Is to Improve Metabolism

To my mind, however, the whole question — when it is not a matter of abnormally small lungs, or a disordered condition of some of the ductless glands — hinges upon perfecting the metabolism, assimilation, and the proper oxidation of the food. In achieving this result, I have found nothing better than an ideal balanced diet, as outlined in Chapter XIII, *in reduced amounts.*

Inasmuch as the condition is due to imperfect conversion of the food substances, it is obvious that the only rational relief is best gained by perfecting the digestive processes. To perfect the digestive processes, to bring the corpulent to normal, I employ almost exactly the same diet as I do to bring the emaciated up to normal; except that I give the obese considerably less of the same diet than I do the emaciated, and also substitute buttermilk or

skimmed milk for whole milk, so as to cut down the butter fats.

I remember two recent cases, treated in this way, in which the corpulent one lost thirty-five pounds in six weeks, while the emaciated patient gained twenty-six pounds in two months.

It must be remembered, also, that the final conversion of the finished food products into cell structure takes place chiefly during sleep, sleep being the body's time of most active reconstruction.

Don't Eat Any Breakfast

Therefore, it is clear that if any meal can be safely eliminated, or drastically reduced in quantity, this meal should be breakfast.

So the juice of a lemon, squeezed into a glass of hot water, and perhaps a cup of weak coffee, without cream or sugar, may make an excellent and adequate breakfast for many who are not required to expend too much physical energy during the forenoon.

If a little more substantial breakfast seems necessary, a glass of buttermilk and a small piece of toast, with such a "painting" of butter as is served in many of our best restaurants these days, may be added.

Luncheon should consist of about four

ounces of beefsteak, or its equivalent in lamb, mutton, (occasionally veal; or any kind of fish except mackerel, eel, or other fatty fish), or oysters, clams, crabs, or lobster.

A Somewhat Reduced Luncheon

A slice of whole wheat bread, and a tablespoonful of spinach, string beans, green peas, lima beans, or cauliflower may help to balance out the luncheon; or a little lettuce or asparagus may be taken.

This menu may be varied from time to time with an egg salad; or a slice or two of crisp bacon and one egg; boiled whole rice and skimmed milk; or macaroni and a little grated cheese. A glass of buttermilk or skimmed milk, or a cup of weak coffee, without cream or sugar, or with just a dash of cream, may be drunk with the luncheon.

For dinner may be eaten four ounces of roast beef, or its equivalent in mutton, veal, ham, or any fowl (except goose or duck). Fish (except the fatty fish), shell fish, eggs, and game of all kinds, may be used with discretion.

Dinner Is a Banquet

It may be advisable occasionally to indulge in a meal of clear soup, or vegetable soup (omitting the fermenting onion or bean from the mixture, although robust persons can at

times even "get away" with these), and a little toasted bread or zwieback, or rye or graham bread may be used. This meal is filling, and not fattening. It satisfies the hunger, and yet does not furnish too great an amount of food material to be oxidized.

Occasionally boiled beets, carrots, turnips, or squash may be eaten. All food should be thoroughly chewed, not so much for its effect in facilitating digestion, as that the appetite may be sooner appeased; for whenever each bite of food is chewed a long time the desire for the quantity of food is invariably lessened.

Needless to say, the interdiction against sugars and starches — as explained in the chapter on "The Ideal Diet" — applies with even greater force to the diet in obesity.

What to Keep Away From

Potatoes, tapioca, sago, every form of candy, cake, pastry or pie, and fats of all kinds, except in very moderate quantities, should be absolutely tabooed, if one is really in earnest in his desire to avoid the possibility of diabetes, heart disease, asthma, gall-stones, apoplexy, gout, and disturbances of the secretory organs that so frequently arise to plague the overly fat.

No food should be taken into the stomach before going to bed. For the sleep-time being the period of most rapid reconstruction, the night lunch is necessarily the most fattening meal of the day.

Don't Eat Before Retiring

If one has become accustomed to eating a lunch before retiring, for the purpose of overcoming insomnia, a glass of buttermilk, or warmed skimmed milk, may be drunk. This will usually suffice to draw the blood away from the brain, and permit tired Nature's sweet restorer to come again into its own.

These suggestions, if carefully and conscientiously followed, have been successful in overcoming obesity in hundreds of my patients. There is no privation entailed in following them, as at all times there is an adequate amount of building and energy-forming material provided for *normal* body requirements.

Where an abnormal craving for cakes, sweets and pastries exists, it is obvious that the sooner it is smothered the better for the avoirdupois of the individual.

Remember, however, that there is a vast difference, so far as physiological functioning

But Don't Worry About Your Fat Unless It's Excessive

is concerned, between being *fat* and being just normally *plump*. Be guided in this distinction by the tables on weight and height, printed on most weighing machines everywhere. These are quite accurate.

Don't worry about putting on a little fat during the period of ripe maturity. For remember that fat in middle-age is a balance in the Bank of Life against the lean days that are to come; and that embonpoint may stand between you and a possible health bankruptcy.

It has been proved by medical statistics that the man or the woman who is ten to twenty pounds overweight for his or her height stands a fifteen per cent better chance for recovery from pneumonia, or from any of the wasting diseases that "eat up tissue," than does an individual of even normal weight. For if the tissue isn't there in the form of fat, the disease processes will take it out of the muscles, or out of even more vital structures.

So even to be a "trifle stout" has its compensations. Finally, remember that usually, if you are required to battle against an obsessing mantle of fat, you have a life job on your hands.

It's war to the knife, and the knife to the

hilt — no quarter given or taken — until the lean and slippered pantaloon days creep stealthily into your cosmos. And then, maybe, you'll wish you had some of your fat back again.

CHAPTER XVI

SOME NEGLECTED FOODS

In these trying days, when food conservation is the vital question of the hour, and when the High Cost of Living is causing three wrinkles to grow on thousands of brows where none grew before, it seems almost criminal to trample wholesome food under foot, to pass by palatable nutriment in disdain, to consign to the garbage can material succulent and health-giving, and to neglect to gather sustaining provender because it might entail working a little for bait and going fishing for food. Yet this is just what we are inflicting upon ourselves right along as punishment for our sins of ignorance — or laziness.

Get Rid of the Dandelion by Eating It

Take our neglect of the ubiquitous dandelion as an example. How many know that this lowly weed, which grows in such profusion in this latitude as to constitute itself an actual nuisance, is perfectly delicious, either eaten as a salad, or boiled, as spinach and

other relatively expensive greens are boiled, and served as a vegetable, with olive oil, salt and pepper to season?

The dandelion green is also rich in a medical principle (taraxacum) which exerts a powerful tonic influence upon the kidneys and promotes the activity of the stomach and intestines. The water in which the dandelion greens are boiled can be freely drunk (a glassful at a time, hot) for the same beneficial purpose.

Don't Throw Away the Outside Leaves

The coarse outside leaves of lettuce, or chicory, and the beet and celery tops, all of which are now most generally thrown out, are also excellent, boiled and served as a vegetable. All of these have laxative properties, and all furnish "roughage" — the "hay" so badly needed in order to stimulate, by its bulk and the roughness of its fiber, the peristaltic action of the intestines.

Certain species of seaweeds are also valuable in this same connection, not so much for their intrinsic food value, as for their digestion-stimulating bulk, and for certain lubricating and other qualities which they possess. The Japanese, who were forced by over-population to eat, or to try to eat, anything that

didn't bite them first, long ago discovered the edibility and the value of seaweed, and now use it quite extensively, making up the agar, or gelatinous base of the seaweed, into various combinations of food products and confectionery.

Mussels Are Perfectly Delicious

But our dietetic waste is not confined to vegetables by any means. Those who live at the seashore during certain periods of the year quite uniformly overlook the lowly mussel, while frequently getting up sufficient ambition to delve for the more highly organized clam. A patient of mine informs me that while he has been going to the shore for many years, yet he never tasted a mussel until this past summer. An Italian friend visiting his family gathered a small pail full of the shell fish from one of the innumerable mussel beds over which he had been swimming, rowing and wading for years, scrubbed them carefully, put then in a pan with a little olive oil and a suspicion of garlic, and steamed them as clams and oysters are steamed by the cognoscenti.

The result was a revelation. The shell fish were meaty, full-flavored and tender. It was afterwards found that they also made a most delicious stock for soups, and were useful in

various other ways. Mussels are found in almost inexhaustible supply, and gathering them consists in merely picking them up. It is almost too easy to be interesting.

With fishing this is not exactly the case. One must have a love for the game, if not for the labor connected with it. Otherwise it amounts to extremely hard work for relatively little compensation. Yet it is perhaps the most health-giving exercise one could indulge in, furnishing, as it does, physical exercise, fresh air and excitement in a combination attainable by no other means; and at certain times the fish are found in rich profusion.

Fishing Is a Splendid Food-Gathering Exercise

However, not one per cent of all who go to the shore or the other watering places ever go fishing. Consequently, they never learn how to fish, for fishing requires a certain amount of skill and dexterity acquired only by practice. So they neglect to garner this fair crop of the sea — one of the most delectable of all the delectable gifts of Nature, and one which, if it were more freely used, would not only go far to reduce the expense of feeding the human race, but would very materially decrease the sum total of diseases, or physical

delinquencies, caused by the excessive eating of cereals and starches.

Acorns, roasted and ground, and drunk instead of coffee, are largely used in certain districts in Europe; there is no reason why they should not be popular in this country.

So with numerous other things — such as rabbits and hares, squid and octopi — which have a large usage among our foreign population, but which most of us wouldn't touch with a ten-foot pole. We should lose no time in becoming familiar with these valuable foods and take immediate and continual advantage of the economies their use would effect.

Saving Food by Drying it

One of the most important of all measures for the conservation of food, and for the general improvement of the health of the race, has after years of painstaking experimentation been solved by the United States Bureau of Dehydration, working in conjunction with the Department of Agriculture.

This measure has to do with the scientific preservation of vegetable food-stuffs, fruit, meat and fish, by the dehydration of these products. With vegetables, in particular, this is destined to be of enormous value, through the utilization of immense quantities of vege-

tables now permitted to go to waste because of the lack of proper facilities for their preservation.

A Tragic Waste

This is one of the most senseless and tragic wastes that the human race, with all its wild, weird extravagance, has ever been guilty of; for it pilfers prodigally, it takes nutriment from the needy, and it starves the destitute. It is the antic disposition of madmen — who contemptuously cast away with one hand the full half of what both hands have labored to create. The cost of the fifty per cent of vegetable and fruit food that remains is doubled — just because we didn't know what to do with water when it is tied up with food.

It Is Water That Causes Decay

These vegetables decay because they contain water; and it is only in the presence of water that the various organisms that promote fermentation in vegetable matter can thrive and propagate their busy species.

The possibilities of this decay can be better appreciated when we remember that beets, for instance, contain 87% of water; cabbages 91.5%; onions 87%; potatoes 78%; and tomatoes 94.3%.

There is only one pound of food to every

fourteen of water in spinach; one to twelve in carrots; and one to thirteen in turnips.

In every part of the country, every day in the year, an aggregate of hundreds of tons of indispensable valuable food-stuffs is wasted. Indeed, it is *worse* than wasted, for during its period of decomposition it constitutes an actual menace to the health of the country.

Hundreds of Tons of Food-Stuffs Wasted

But more tragic still is the waste of the world's mineral sources, the besotted scattering to the winds of those things that make life possible on this planet — things that Nature creates only by slow, laborious processes, and which are yearly becoming more vital to the continued life and fertility of the soil.

For example, scores of thousands of pounds of precious nitrogen, potash, and phosphorus are dumped into the ocean, incinerated in garbage furnaces, or left to rot, polluting the air and draining danger into the water supply.

Precious Minerals Thrown Away

And this while the problem of obtaining fertilizer for our rapidly depleting soil is one of the most pressing that confront agriculturists and economists today.

A small proportion of this waste is fed to

hogs, and thereby reclaimed. But so fractional is this amount, in comparison with the giant total of waste, that it is only a source of irritation to those who are future-looking enough to understand the true meaning of this senseless spoliation.

Those who suffer the most by this wholesale rape of Nature are, as always, the innocent bystanders — in this case the constipated, mineral-starved American Public.

It is notorious that in this land of plenty and reckless exploitation of natural resources there are, not thousands, but millions, who don't know the taste of a green salad or succulent vegetable, or a ripe orange or grape fruit, from one late Summer or Autumn until the next. Their Winter time conception of a vegetable is a boiled potato or a can of tomatoes.

Starving on Food

Hundreds of hotels, thousands of boarding houses, and scores of thousands of families, ignorant of the fundamental meaning of a "balanced ration," hold that peas or rice, or beans, are "vegetably" enough to accompany a dish of pork or beef.

They ignore, if they ever knew, the fact that rice is mostly carbohydrate — a starch

product — almost identical with the potato or bread they already have; and that peas or beans are a sort of vegetable meat hash, containing 22.85% of protein and 52.36% of starch.

All the while these millions are suffering from the lack of essential mineral salts — lime, potassium, iron, and other elements that enter largely into the composition of bones, teeth, nerves, and other cell-structure.

As a consequence, we Americans have the most rachitic bones, the softest, poorest teeth, and the most unstable nerves of any civilized peoples. A perfect set of teeth is hardly to be found in a child, and among adults they are much less frequently met with than are molars among hens.

We Lose Our Vitamines Too

Vitamines, too, those unanalyzable and undefinable but tremendously important substances that contribute so much to the general physiological "tone" of the body, are missing, if lettuce, celery, apples, and other uncooked vegetables and fruit are missing from the dietary.

But most of all the "hay" — the bulk, made up of fibre and cellulose of vegetables — is lacking, when vegetables and foods, low in

actual food values, but rich in mineral salts and water, are lacking.

This is the chief reason that constipation is so prevalent among Americans; and what constipation does to human beings can never be sufficiently understood.

But the Problem Is Now Solved

It is now possible, however, through the experiments of the Dehydration Bureau, and certain enterprising business interests, to reduce the water content of vegetables so that there remains no more than 12% of moisture. In this state of relative dryness the bacteria that cause decay can no longer thrive and multiply.

By the process of scientific dehydration, all the original flavor and food-value of the vegetable or fruit is retained; while, at the same time, sufficient moisture will have been extracted to insure perfect keeping qualities under all conditions of temperature or humidity.

By the universal adoption of dehydration and dehydrated products, the element of "seasonal surplus" will have been done away with; even the poorest families will be able to afford vegetables twelve months in the year. The economic saving, the general improvement in health, the tremendously enhanced

nutrition of the American people, will have been assured.

It is altogether a wonderful step in the direction of the conservation of two of the most vital resources of our nation—human beings and the food upon which they live.

CHAPTER XVII

URIC ACID — WHAT IT MEANS

There is no one question in connection with diet and disease in which there is greater misinformation, even among the medical profession, than on the subject of uric acid. All sorts of fanciful theories have been advanced to account for it, and all manner of ridiculous claims have been made as to where and how it acts; and yet most of these claims are founded on the simplest misconception of facts.

Uric Acid Formed in the Kidney Cells

The only logical explanation for the production of uric acid is that it is formed normally and solely by a process of oxidation reduction, or burning up, of fully utilized and partially broken up proteid substances in the protoplasmic structures which make up the glandular cells of the kidneys.

Uric acid, *as such,* never exists in foodstuffs. It is not found either in red meat or in white meat; nor is it found in any of the

albuminous constituents of the vegetable kingdom. It can be manufactured, however, from the albumin contained in the red or the white meat, as well as from the albumin contained in milk, eggs, or any animal food.

It can also be manufactured from the albumin found in vegetable substances; but it does not exist, as free uric acid, in the protoplasm of either animal or vegetable foods, any more than do the innumerable aniline dyes and coal tar derivatives exist, as such, in the native coal tar.

Vegetable Matter Also Contains Material for Making Uric Acid

Uric acid is never found in the blood, as is so generally and erroneously claimed, for as soon as the food enters the system — assume, for the sake of argument, that there *could* be any free uric acid in the food — it would at once come in contact with the free alkalies of the alimentary tract, and be instantly converted into a urate. This alone would preclude the possibility of uric acid ever reaching the blood by this route. All observers admit that urates are never found in the blood, as a normal constituent of blood.

There is no Such Thing as "Uric Acid" in the Blood

Furthermore, as the blood is a strongly alkaline fluid, even if the uric acid did reach

the blood stream it would, by virtue of a common law of chemistry, be converted into a urate. So there is no method known to chemists by which we can assume that uric acid exists in the blood, even though most writers are constantly referring to "uric acid in the blood" as though they believed it true.

In profound disturbances of metabolism, uric acid may be formed by one organ or group of cells taking up temporarily the work of another organ or group of cells; this most commonly occurs in the cartilage cells of the great toe joints. Hence the development of gout.

How Uric Acid Is Produced

All over-production of uric acid is dependent upon three general principles:

First, defective oxygen supply.

Second, taking into the system more food than can be perfectly oxidized.

Third, disturbances in the action of the nervous mechanism.

All three of these "errors" are more or less closely bound together. Yet we not infrequently find that one or the other of these disturbances predominates and must be removed before the normal output of uric acid is reëstablished.

In the study of health and disease, there are a few premises that admit of no question.

How to Stop the Over-Production of Uric Acid

If, for instance, we take the right amount of the right kind of food and the right amount and kind of exercise, and if we do not worry and overtax our nervous systems, thereby upsetting digestion and metabolism, we *must* be well. That is, providing we are born with a reasonably sound tissue-formation. Therefore, departure from the normal standards of health is generally due to one of three things: eating too much, taking too little out-door exercise, or using up too much energy from some undue nervous strain or tension.

Eat Less, Exercise More, and Don't Worry

If a person eats too much he takes in more food than he can oxidize. If he doesn't get sufficient out-door exercise he invites imperfect oxidation. If he has shocks and undue strains upon his nervous system, these disturb the circulation and digestion and prevent the free introduction of oxygen into the system, so that sub-oxidation follows as a natural course.

The symptoms of the lesions we class as gout, rheumatism, diabetes, et cetera, are all

conditions of under-oxidation and result from an insufficient amount of oxygen being taken into the system to completely burn up the end-products of food. These abnormal deviations in oxidation may be transitory or permanent; when they are continuous, well-defined disease results.

In one person this is manifested by rheumatism, in another gout, another diabetes, another Bright's, and so on. Why some people will have one disease and some, living under practically the same conditions, another, is something for which, as yet, we have no adequate explanation. They may eat practically the same kind of food, take the same amount of exercise, and labor under substantially the same variety of nervous strains and worries, yet they may have any one or more of a dozen different diseases. But all these diseases have their common origin in one cause, deficient *oxidation.*

How Can This Be Explained?

I believe deficient oxidation is due to the action of specific germs in the alimentary canal, which cause putrefactive disintegration of the food-stuffs, and thus produce special toxins. Consequently when these poisons are introduced into the blood, they cause the trouble

which develops into one or the other of these under-oxidation diseases. If, however, the patient will observe certain rules that tend to put a stop to putrefactive disintegration of the proteid, he will improve; and if he carefully regulates his diet, takes the proper amount and kind of out-door exercise, and overcomes his nervous strain, *he will get well.*

Right here it may be pertinent to observe that uric acid, in itself, is absolutely harmless.

Uric Acid Harmless in Itself

It is the toxic antecedents, the poisonous isomeric proteid molecules out of which uric acid is formed, that are the really irritating principles or substances, and they must be disposed of before any definite relief can be expected.

It is not generally known that there are two distinct varieties of uric acid, not distinct from a gross chemical standpoint, but radically different from each other in their isomeric construction, actions and effects.

The first variety indicates that there is a comparatively harmless condition, unless the cause which has produced it be continued for too long a period of time; then it may be indicative of a certain state of toxic irritation.

That form of uric acid characterized by the simple deposit of reddish sediment is usually

caused by eating a couple of baked potatoes at night, or by feeding too liberally upon starches or sugars.

The "Brick Dust" Deposit Not Fatal

This variety of uric acid precipitates readily upon the bottom of the vessel when the urine becomes cold, and constitutes the familiar "brick dust deposit," about which the vendors of various kidney pills and swamp-root mixtures profess themselves to be terribly exercised.

The familiar picture of the human wreck, with a facial expression denoting extreme misery, and one hand pressed over the region where one of his kidneys is supposed to be, is an example of this alarmed and interested misconception.

First, if this woe-begone gentleman really had kidney disease, he probably wouldn't have any pain to complain of and to distort his features. Furthermore, if he had pain in the back, it would most likely be from a faulty liver action, lumbago, or some sub-inflammatory condition located in the muscles.

Second, the terrible "brick dust deposit" from which he suffers wouldn't give him these symptoms. For this insoluble but rather loosely-combined form of uric acid is elimi-

nated from the system as fast as it is formed—"and there's an end on't."

If the gormandizing is too long continued, naturally, a toxic condition may develop in the intestinal canal, and this is the real source of danger; for this condition may lead to putrefactive fermentation in the intestine, which is one potent cause of that state of under-oxidation which stimulates the proteid molecule to "go wrong" somewhere in its process of digestion and conversion, and thereby to form the toxic antecedent products from which uric acid is derived.

The Poison of Uric Acid

It is this entirely different "species" of uric acid, derived from these toxic antecedents, which is the dangerous variety; it indicates that there is within the system a disease-producing irritant to the kidney cells and other tissues.

This form of uric acid is a closely-bound, isomeric form of molecule, which may remain for weeks, or even months, in a specimen of urine, without being deposited as sediment, held in solution by some unknown agent. Indeed, in many instances, the only method by which its presence may be detected is by boiling a specimen of the urine, and then adding a

precipitating agent, such as very dilute acetic acid, so dilute, that it will not decompose the normal urate of soda. If this combination, so treated, be permitted to stand overnight, large quantities of uric acid crystals will be found in the urine.

So the "brick dust" uric acid in both forms is a harmless product; but the antecedent to this, the "insoluble" uric acid, is a dangerous protoplasmic irritant, and the sooner you get rid of the cause of it the better off you'll be.

Giving Alkalies Doesn't Stop Uric Acid From Forming

The giving of alkalies, so generally practiced in this country, may relieve, for a time, the irritating effects of the uric acid by converting the acid into a urate as it drops from the kidney cells into the urinary tract. In this way it may mask the symptoms produced by the excessive output of uric acid; but it never *cures*.

It may be necessary, if a patient is suffering intensely, to give an alkali for a while; but by doing so the symptoms are only alleviated.

This is what happens to people who go to Carlsbad, Saratoga Springs, French Lick, or other resorts, where the attempt is made to sluice disorders out of bodies by flushing out

the kidneys with water, supposed to have uric acid-solvent powers.

These people feel better, temporarily. In fact, may come back, thinking they are well; but they have just as much over-production of uric acid as ever, only they don't know it, for the large amount of alkaline fluid passing through the genitourinary tract masks the condition.

Disturbance in metabolism, however, which is causing the excess of uric acid, goes on unchecked, and it frequently happens that the patient may die just when he is thought to be getting well, notwithstanding the fact that the urine was apparently free from uric acid, and that the patient passed it without pain or discomfort.

So put not your faith in alkalies or "uric acid-solvents," no matter how highly they may be extolled; for they are only palliative at best.

Yet all these uric acid conditions can be cured, if we recognize malnutrition and under-oxidation as the cause for the development of the over-production of uric acid, and look upon the uric acid purely as a symptom and not as a condition. For free uric acid in

"Incurable Diseases" Can Be Cured

the urine merely tells us that the patient is eating too much, exercising too little, or is under some nervous tension which is tightening up his blood vessels and preventing the free utilization of the oxygen and the nutritional elements.

In this country, and especially in the big cities, where men are hard driven from morning till night, we find that all three factors come into play.

The diet leg of the tripod isn't difficult to regulate, if the patient will make up his mind that he wants to coöperate. It is somewhat more difficult to get him to take the required amount of exercise, although it *can* be done. But to manage the worry leg is a very difficult problem indeed.

Therein the Patient Must Minister to Himself

There may be some definite method of getting a person to stop worrying, without giving him back the money he has lost, or furnishing him the position he can't get, or providing him with the girl who doesn't want him — but I confess I don't know of it.

I do know, however, that when the diet is scientifically regulated, and the proper exercise is taken, the patient is much better able to withstand the nervous strain, and to minimize

the evil effects of a cause of worry that cannot be removed. This, I submit, is indubitably helpful.

CHAPTER XVIII

FIGHTING RHEUMATISM WITH FOOD

It is no doubt true that many cases of rheumatism have their origin in focal infections, in pus and poison factories at the roots of decaying teeth, in the crypts of ulcerated tonsils, in neglected or improperly treated venereal infections, and in organs in which there exists some latent pathological process.

But it is also true that by far the most frequent cause of rheumatism is to be found in dietetic errors, *in eating too much,* or *in eating too much of the wrong kinds of food.*

Wrong Food the Most Common Cause of Rheumatism

If more food is taken than can be digested, absorbed, assimilated, and transmuted by the liver and perfectly oxidized, the result must be that the oxygenating capacity of the system is exceeded, and, sooner or later, rheumatism, or some other form of malmetabolism, will develop.

One of the quickest ways to exceed the oxygenating capacity of the system is to eat

too largely of those substances which are most easily oxidized, and which are mere heat and energy producers, such as sugars, starches, and fats.

This robs the protein, or building substance, of the oxygen needed to properly convert and oxidize its elements, and it is the by-products formed by this robbery that produce the symptoms we know as rheumatism.

Most rheumatics are prone to eat liberally of sweets and vegetables, which contain an overwhelming percentage of starch and sugar. These food substances, being easily transformed, exhaust the oxygenating capacity of the system, so that the final oxidation of the proteid compounds in the food is imperfectly accomplished.

Rheumatics Eat Too Much Starch and Sugar

The percentage of urea in the urine falls. Uric acid increases, and lactic acid appears — and to these might be added a long list of other by-products.

In the light of this conception of rheumatism and its causes, it is no wonder that all forms of drugs have failed to have any specific action on the process.

In fact, in the vast majority of cases, excluding focal infection, the only way in which

any *permanent* benefit may accrue in rheumatism is through a proper regulation of the diet.

It is vitally necessary to choose those food elements that will best conserve the oxygenating capacity of the system, while at the same time securing to the damaged organism the largest amount of constructive and reparative material that can be utilized with the least loss of vital energy.

We must choose those food-stuffs that can be most readily digested and completely oxidized; so that no by-products will develop, and so that only the normal elements representing tissue waste shall appear as end-products in the excretions.

Animal Foods the Easiest to Digest

As animal proteids and fats are more easily digested than those of vegetable origin, and as animal food on the whole requires a smaller amount of oxygen for its complete transmutation than does vegetable food, it is plain that animal food should be selected when disease processes are rampant within the system — and this applies to any disease process.

Therefore, the dietetic program should consist in stepping up from milk into broths, eggs

and meat; finally including the saccharine and starchy compounds of vegetable origin.

The simplest form of animal diet, and the one that will yield the largest amount of constructive material with the least expenditure of oxygen and vital energy, is either skimmed milk or buttermilk — preferably buttermilk, because the milk-fat, which calls for a large amount of oxygen to "consume," has been removed.

These two forms of milk are not only unusually easy to digest, but they are also easy to assimilate. The amount of heat and energy produced upon this kind of diet is comparatively small, but the enhanced nutritive and reparative action, which is the chief thing needed, is greatly augmented.

"Eat" Fermented Milk and Don't Bolt it Whole

I have found that occasionally the fermented milks, Kumyss, Matzoon or Kefr, are better borne and more readily digested than the skimmed milk or the buttermilk; but usually the cheaper food forms give quite as good results as do the expensive fermented milks.

Be sure to sip the milk — any milk — slowly, for large "gulps" of milk are much more likely to form indigestible curds in the

stomach, which are with difficulty broken up by the gastric juices and acted upon by the digestive ferments.

As soon as a better state of nutrition is established, and repair is well under way, which will be evidenced by an improvement in the quality of the urine, as well as by an improvement in the general symptoms, this limited diet may be enlarged — giving whole milk instead of skimmed milk or buttermilk.

Then eggs should be included; next, meats of various kinds, including poultry, fish, oysters, clams, et cetera; and finally the starch and saccharine compounds, preferably in the form of whole wheat bread, which should be at least twenty-four hours old.

Thus we establish a well-regulated mixed diet, containing water and mineral salts, fats, sugars, and starches — and chiefly, animal proteids.

Having thus established the mixed diet, great care should be taken to keep the starches and sugars, or ordinary food-stuff, in the minor quantities; while the fats and proteid of *animal* origin should constitute the bulk of the diet.

Potatoes especially, vegetables generally, and all forms of sweets and pastries, should

Potatoes and a Rheumatic Patient Do Not Agree

be temporarily ruled off the diet list; where there is a tendency to recurring attacks of rheumatism they should be *kept off*.

Fruits are best omitted altogether, as they tend to produce abnormal fermentation, as has been pointed out in another chapter.

Alcohol, especially in the form of malted liquors, is rank poison to a rheumatic.

Water should be drunk freely, not only because of the specific need of the organism itself for water, but also because of the solvent powers of the fluid, its flushing effect upon the kidneys, and its stimulating action on the bowels.

For the benefit of my physician readers, I would say that the administration of a combination of

A Prescription the Doctor Will Find Helpful

Inspissated ox-bile, forty grains;
Pancreatin, sixty grains;
Haemagalol, one hundred and twenty grains;
Strychina sulphate, one grain;
Caffeine hydrochlorate, sixty grains;
Extract colycynth compound, twenty grains;
Extract taraxacum, thirty grains.

(Fit into fifty capsules. Give two before each meal.)

helps wonderfully in restoring normal digestive and assimilative function.

I am well aware that the rigid plan of dieting here outlined is not commonly recommended or taught; but an experience with many hundreds of cases, where all other methods have failed, justifies me in believing that this selection of diet, perhaps with such remedies as seem needed, will produce definite results for good in almost every curable case of rheumatism.

CHAPTER XIX

DOES MEAT-EATING CAUSE CANCER?

One of the favorite battle cries of the proponents of a vegetable diet is that meat-eating is the legitimate ancestor, on both its mother's and its father's side, of cancer, and other malignant degenerative conditions of the cell structure.

Like many other widely disseminated notions, this belief has a slight basis of fact for its support, for the simple reason that (as we have seen in a previous chapter) it is easier to over-eat of meat than it is of any of the other varieties of protein.

Consequently, there is, in those who over-eat of meat, a liability to elaborate and store up in the system an excessive amount of under-oxidized end-products of proteid digestion; which under-oxidized products may, on occasion, cause a local irritation somewhere in the alimentary tract, or in the organs concerned in the conversion of these products.

It was Dr. Mayo, in his inaugural address

as President of the American Medical Association, who first voiced the conviction, rapidly gaining ground among medical men everywhere, that cancer of the stomach and the intestines has its most frequent origin in over-eating and indigestion.

It's Over-Feeding—But Not Over-Feeding of Meat

Digestive irritations, continued over a long period of time, undoubtedly develop in the tissues of the stomach and bowels — and in the general system, by their absorption into the circulation — toxins that break down tissue resistance, and that produce that variety of "retrograde metamorphosis," or reversion to embryonic type, that results in the development of the cancer process.

However, with equal truth, Dr. John Bell, head of the Cancer Department of the Battersea Hospital of London, has asserted that "Cancer begins in the colon." This is an opinion shared by many accurate observers. In fact, at a meeting of a national medical society, a few years ago, during which cancer was a prominent subject for discussion, several hundred physicians who had had a large experience in treating cancer agreed that

But Cancer Also Begins in Constipation

" they had never seen a case of cancer in which pronounced constipation (often not fully recognized, as when there was a daily incomplete movement) was not a prominent feature."

The truth of the matter is that cancer has its first origin in the embryonic cell, or in a group of embryonic cells, caught in some tissue, which subsequently, because of irritation, or through some " twist " or defect in the nutrition of the area, becomes a fertile soil for the growth and development of the cancer cell.

When Doctors Disagree

Lacking these embryonic cells, no person would ever develop cancer — no matter *what* he did, nor how much irritation he might cause any particular structure. Lacking the defect in normal functioning of some certain gland or organ, which gives the cancer its chance to " sprout," no danger of the growth of cancer tissue need be apprehended.

So cancer is a constitutional, not a local, disease, and the predisposition toward it must exist before it can manifest itself in any local area.

Unfortunately there is at present no means of definitely determining whether or not one has any of these embryonic cells in his body,

or whether the predisposition exists — as a result of faulty functioning in the nutrition of certain structure. So it is the better part of valor to avoid the tissue irritations, and other causes that *might* lead to the development of cancer.

It is quite reasonable to suppose, however, that whatever form of diet tends most certainly to develop putrefactive fermentation in the intestine, and the formation of decomposing food products, with the irritation inevitably resulting, tends also to produce cancer.

Because of this fact it would follow naturally that that balance in the food intake which is most completely utilized, and which forms the least amount of toxic material, is least likely to develop cancer.

There can, therefore, be no reasonable doubt that this balance can best be secured by giving a form of diet most easily digested, most completely assimilated, and most thoroughly evacuated. This diet consists of meat, eggs, milk, green vegetables, and fats and carbohydrates, in balanced proportions.

So meat, of itself, is no more likely to cause cancer than is any other food form which is

completely utilized. If any one insists upon eating meat three times a day, trusting to a bi-weekly movement of the bowels for his physical house-cleaning, he very likely may be courting serious trouble.

Don't Be Afraid of Meat

He will inevitably develop autointoxication from putrefactive absorption. He will certainly load his system with a superfluity of poisonous material. He will emphatically decrease the resistance of his tissues, and he *may,* if he keeps it up long enough, finally find himself in a condition where the services of a surgeon are imperative.

This is all there is to the bugaboo theory that meat-eating breeds cancer — or, for the matter of that, rheumatism, or Bright's, or arterio-sclerosis, or diabetes, or any other pathological process.

The Bugaboo Is Only Stuffed With Straw

Anything that is done to the human body in excess, even though it be only the drinking of pure water, is bound to have a deleterious action sometime, somewhere, and to some particular organ or structure.

Which leads obviously to the conclusion that moderation is a virtue that is fundamental, and that is its own reward: conversely,

that excess is a crime, punishable by disease, disability and death.

CHAPTER XX

FERTILE SOIL, IMPROPER FOOD, AND GERMS

If all germs could be kept away from an individual, from the moment of his birth, he not only would not have any disease, but, in all probability, he would never live long enough to indulge in a disease.

This has been proved, over and over again, by the futile attempt to hatch eggs in sterile incubators under conditions that insured absolute protection against bacterial contamination. Ordinary, well-behaved eggs simply refuse to hatch under these distressingly healthy conditions, or if they do, the over-sterilized chicks merely take a look or two at their beautiful sanitary surroundings, and then turn up their toes and die.

Bacteria Necessary

The same thing is true, in a measure, of the hatching of human eggs. In any event the foetus, for nine months of its development, is in a relatively sterile medium. When it is

delivered from the parturient canal it immediately comes in contact with myriads of microorganisms — floating in the air, contaminating the hands of the nurse, on the clothing and wrappings with which it is clothed, from its own excreta, and from numerous other causes.

If the child should happen to be sub-vital, if it has inherited a defective resistance, it is quite likely that it may contract any number of diseases, ascribed to the activities of germs.

If, on the contrary, the child is normal in resistance, with an adequate supply of phagocytes — the defensive white corpuscles of the blood, whose function it is to kill off invading microörganisms — the chances of its becoming infected are extremely remote.

Keep Up the Nutritive Balance

This is particularly true if the balance in nutrition — especially the interchange between the cell contents and the media in which the cell lies, called by scientists "osmosis" — is physiologically adequate.

As is well known, germs can be made to grow in the laboratory only when all the elements and conditions are favorable to such growth. They must have a degree of temperature, or humidity, or presence or absence

of oxygen, and a suitable medium upon which to feed; otherwise the culture will be abortive.

Exactly the same conditions must apply to the human culture tube as are applicable to the laboratory observation. If the subject is deficient in vital resistance, by reason of the disturbance of various chemical activities, or because of defects in various nutritive processes — which, in turn, depend largely upon perfect nervous stimulation for the proper performance of this work — the individual may develop pathological changes characteristic of the particular strain of germs which can best thrive and multiply in the medium he has thus provided for their growth.

We Need Both Germs and Soil

As to the relative importance of germs and a defective organism, in causing disease, there can be no question; both are cut out of the same piece of cloth; they are interdependent. If the soil is not prepared, the germ can gain no foothold. If the soil is prepared, and there should be no germ to plant in it, no pathological process could manifest itself.

I may say that it is my belief — although this may be difficult to prove — that the character of the disease is due to changes in the

proteid molecule, as a result of the activities of the germs and their toxins, in the presence of a subnormal organism.

This original proteid molecule splits up into an infinite number of subsidiary molecules, and the *recombining* of these molecules into different molecular forms is the "twist" that makes the substance either a poison or a tissue food. Witness egg albumen and snake venom, with the same chemical symbol, as an instance of this.

In view of these facts, the chemical transmutation becomes the essential factor in the production of disease, and its manifold symptoms, and the question as to whether germs, or fertile tissue soil, or improper balance of the diet, caused disease, seems to be decided in favor of the factor that makes for sub-nutrition.

This factor is lack of the proper balance, proper amounts, and proper biochemic constituents of the food.

It Can Be Done

The way to overcome susceptibility to infection is to eat properly, cultivate a placid, equable state of the mind and of the nervous system, keep up an active elimination from all the excretory organs, including the skin and the

lungs, and use ordinary common sense in avoiding undue exposure to infection.

If one observes these simple hygienic rules, it is comparatively easy to bid defiance to practically any form of germ infection, except such forms as are acquired by direct inoculation — as anthrax, hook-worm disease, syphilis, gonorrhoea, malaria, yellow fever, sleeping sickness, and other diseases that gain their origin by the entrance of the micro-organisms into the sub-dermal tissues and into the blood currents, through abrasions, punctures, and other direct means.

This, it seems to me, is the rational explanation of the origin of disease.

CHAPTER XXI

WHAT IS THE TRUE STATUS OF ALCOHOL?

Amid all the din and turmoil of clashing opinions concerning the true status of alcohol, there is one fact that stands out beacon-clear. This is that extremists on both sides of this question are in the saddle, and are riding amuck through what should be a definite and demonstrable scientific proposition.

For notwithstanding the generally accepted opinion of those now in the ascendency, and irrespective of the consensus of opinion expressed by the American Medical Association, there is one factor of physiological importance now quite universally ignored. This is that alcohol has a distinct function as a heat and energy producing agent. It is especially valuable in depraved conditions of the body; in pathological depressive states; and in the lethargic physiological activities due to advancing years, as well as to condi-

Alcohol an Energy-Producing Agent

tions in which the waning life-forces from general debility, senility, or any other cause, need definite stimulation.

On philosophical, economic, and moral grounds, it is undeniable that the human race would be infinitely better off if the use of alcohol as a beverage had never been acquired; for in the abuse of alcohol there probably lies more of sorrow, crime, poverty, vice, and misery than can be justly ascribed to any other agent ever used by human beings.

But the physician, interested only in saving life, and in helping those sorely tried by abnormal or pathological processes, has to do only with furnishing a means of stimulus, in the form of a readily-converted heat and energy producer, to those who, lacking this stimulus, must inevitably die. These are people who cannot, in their extreme condition of debility, get the stimulus out of ordinary food.

A Veritable Life-Saver

There is nothing so far known that can take the place of alcohol in the crises where life hangs by the slenderest of frayed threads.

My first definite and convincing experience in this connection occurred during the terrible pneumonia epidemic of

1874. Professor Alonzo Clark was on service at Bellevue Hospital. Professor Clark advocated the use of alcohol only after the first sound of the heart was inaudible — which was when the patient was already about two-thirds dead.

A very able internist was Dr. Clark, yet I noticed that an overwhelming percentage of patients so treated passed on to the morgue.

When the Nestor of medicine, Professor Abram Jacobi, followed Dr. Clark in the same hospital service, there was an immediate change for the better. Dr. Jacobi believed in the liberal use of alcohol from the very beginning of the disease. His treatment worked a revolution in results, for the great majority of his pneumonia patients recovered, and but very few passed on to the dead-house.

My Routine Practice

In my forty years of practice of medicine, and in my thirty years of active service in the Post Graduate Medical School and Hospital, it has been my privilege to see and direct the treatment of thousands of cases of every conceivable variety.

This experience has led me to adopt a routine practice in all extreme cases of pre-

scribing alcohol early in the pathological process, up to the physiological limit, to all such patients as were in need of readily oxidizable stimulus.

The results, in contrast to the results from the same type of patients to whom alcohol was denied, speak for themselves in the records of the hospital mortality statistics.

Nor am I alone in these conclusions. Some of the very ablest of the English and European authorities have expressed themselves unequivocally in favor of the use of alcohol as a stimulus in depraved physical and lowered nervous states.

Experience Duplicated by Some of the Ablest

In some cases medical men, though strongly biased in favor of the abolition of alcohol for beverage purposes, have been honest enough to give the drug credit for its virtues as an energy-producer. I well remember the sensation created by Professor Alfred C. Post, one of our most famous surgeons, and a strong advocate of temperance, when, during a temperance meeting, he made the statement that while he did not profess to know all there was to know about alcohol, one thing he *did* know, and that was that he "could not practice

surgery successfully without the use of good whisky or good brandy."

Similarly, I have found that in insomnia and in many nervous troubles, chronic or acute, a little good brandy or whisky, well diluted, an hour before meals and at bed-times, has a decidedly beneficial effect.

Effective in Insomnia and Nervous Conditions

In all pulmonary and toxic conditions, associated with pronounced depression and the absorption of much toxic material, alcohol has saved scores of lives at my hands. In advanced tuberculosis, and in infectious diseases, it amounts to a crime on the part of the physician, in my judgment, not to give his patient the benefit of the systemic effect of alcohol.

Even with little children, septic from diphtheria or typhoid, I have found alcohol of inestimable value in tiding over the crisis and helping to overcome the toxic condition.

What is the reason for these results? How have they been obtained? Why is it that no other therapeutic agent in the entire pharmacopeia is as dependable? Why is it that years of experience with thousands of the most desperate cases has only served to

What Is the Answer to This?

emphasize the therapeutic value of alcohol?

The explanation is a very simple one.

It is because of the fact that alcohol is the one product that will yield heat and force without the expense of any digestive energy; for alcohol is absorbed and immediately oxidized in the epithelial cells lining the intestinal tract (at least, this is my conviction). Each gram of alcohol thus consumed yields seven large calories of heat, and without this heat and energy production the patient simply dies from nerve exhaustion and non-eliminated toxins.

The One Product That Yields Force Without Taxing the Digestion

The subsequent overcoming of the toxic condition is the result of increased glandular excretion, which naturally results from increased innervation, or nerve stimulation. It cannot reasonably be due to any direct germicidal or toxin-destroying property of the alcohol itself, because the alcohol has been oxidized and utilized in these epithelial cells, where only does oxidation take place.

Overcoming Toxemia

Furthermore, alcohol cannot get at the blood; first, because it is consumed before it reaches the blood stream — another wonderful provision of Nature; and second, because if

alcohol reached the blood stream in any appreciable quantity, the proteid constituents of the blood would be precipitated, and the patient would naturally die of multiple embolism — plugging up of the pulmonary veins.

From the standpoint of the dietitian it is perhaps admissible that alcohol cannot be classed among foods; for in the strict acceptation of the term, foods are substances which are required for the nutrition of the body.

Alcohol Not a True Food— But a First-Rate Substitute

But from the standpoint of the internist, dealing with disease processes, alcohol acts identically as a food substance *should* act — yielding its store of heat and energy, exactly as starch or sugar would — and at a time during the pathological crisis when food in no other form can be utilized.

So whether alcohol is, or is not, a food, in the dictionary sense of the term, it may well be given credit for a definite carbohydrate value, especially in times of desperate stress.

In view of these facts, it is most unfortunate that in many instances prescriptions of any number of the most reputable men in the profession, when presented to the druggist for

Handicapping the Prescriber

compounding, are handed back to the messenger with the statement that "they cannot be filled."

Yet, if these prescriptions remain unfilled, as written, in many instances the deprivation may work great hardship for some man or woman dangerously ill.

Professor Edward Curtis expressed this truly when he said: "If, under these abnormal pathological conditions, you do not give your patients the stimulus afforded by whisky or brandy, they must die." A long and varied experience has proved to my absolute satisfaction that this statement is true.

In a commendation of this chapter written by Dr. Thomas E. Satterthwaite, Professor of Pathology and General Medicine at the New York Post Graduate Medical School and Hospital, he makes the following statement:

"The chapter on alcohol will displease the prohibitionist, while it will be approved by intelligent practitioners. They will agree with Dr. Porter, that alcohol is often a simple and useful remedy. Admitting, as he does, its many deleterious effects on the community, he still maintains, and gives the necessary proofs, that it holds so important a place as an agent for good, that the present laws for

restricting its use are a real menace to life."

It hardly seems possible to me that any one can be displeased by a search for the truth and the clearer reiteration of indisputable facts. This method in my opinion seems far more scientific than the declaration of fads and fancies which have no foundation in fact.

Some platitudinous genius has said that there are two sides to every question. As a matter of fact, there may be any multiple of two sides to a question.

Neither the advocates nor the opponents of alcohol have touched the fundamentals of the really vital side: which is, that alcohol has a distinct and definite use in a field filled by no other product.

CHAPTER XXII

CURING DISEASE BY DIET

It is impossible to overestimate the importance of properly regulating the diet. No matter what anyone may or may not do in any and every other direction, if he fails to nourish himself properly he cannot continue in health.

If he develops any illness it is incumbent on him to take an even more active interest in what he puts into his system—if he is at all interested in recovering his health.

Therefore, the sensible selection of a diet is a subject on which no man or woman who cares to continue to live efficiently can afford to remain ignorant.

Take the question of Bright's disease, now alarmingly on the increase in this country, as an example. Twenty-five or thirty years ago the diagnosis of "Bright's disease" was, in the opinion of the laity, almost equivalent to issuing a death-warrant. At the present time, however, if we consider the condition

How to Cure Bright's Disease

from its physiological as well as its pathological standpoint, it can be demonstrated that a very large percentage of these cases can be not only greatly improved, but absolutely cured.

The problem is merely to regulate the food intake, by means of an ideal mixed diet, as outlined in Chapter XIII, so that all under-oxidation is avoided. This will prevent the excessive formation of uric acid and such putrefactive toxic products as cause a chronic irritation of the kidney structure.

Another cause of kidney irritation that must be avoided is the frequently adopted method of attempting to treat this condition by a diet of buttermilk or skimmed milk.

The Dropsy of Kidney Disease

Sometimes a patient may do well on this regimen, but the good effects of a fluid diet are not permanent. Similarly with the alkaline mineral spring water treatment, so frequently resorted to, both in this country and abroad.

This fluid-drenching plan is pernicious, for the reason that the diseased kidneys already have more work than they can comfortably attend to, in their share of eliminating body waste; and if the blood pressure is increased

by adding a large amount of water, or other fluid, no good is being done to either heart or kidneys.

Instead of going to mineral springs, or of taking the huge quantities of mineral water, or even milk, that are supposed to be "good for the kidneys," it is most important to greatly restrict the amount of fluid taken into the system, and to give the kidneys a chance to "rest up" a little.

When an excessive quantity of milk is taken, which is necessary if one is to live exclusively on a milk diet, too large an amount of milk sugar and fat is ingested to be completely oxidized by the system.

Too Much Milk Increases Under-Oxidation

The consequence is that these easily-oxidized elements are oxygenated first, with the result that there is not sufficient oxygen left in the system properly to oxidize the proteid molecule. So the patient soon loses strength and energy, and rapidly accumulates more under-oxidation products in the system; which still further irritates the diseased kidney structure.

This milk diet, so popular in the treatment of kidney conditions, is largely deficient in the essential nucleo-albumin compounds.

Hence it cannot be considered an ideal diet in any class of lesions in which progressing anemia is one of the gravest features, as is the case in connection with all kidney disease.

Too Much Meat Also Bad

In like manner, the meats of all kinds, while the best of foods for supplying an easily available form of protein for tissue-building, are deficient in nucleo-albumin. Consequently, they also fall short of being perfect foods.

It must always be remembered, however, in this connection, that beef proteid is the most easily digested, absorbed and assimilated of all food compounds. Eggs and milk stand next, in the order enumerated, while the proteids derived from the vegetable class are the most difficult of all to digest.

All foods of the animal class, in addition to those here mentioned, are deficient in the amount of the hemoglobin-forming element, nucleo-albumin. But the amount that is contained in the animal group, like the associated proteid, is much more available than the same substance which, as for instance in beans, is often found more abundantly in the vegetable kingdom.

The vegetable foods, like the animal groups,

are abundantly supplied with proteid elements. In fact, they contain a superabundance of the hemoglobin-forming element, nucleo-albumin, as compared with the animal class. While both the proteid and the nucleo-albumin are in less available form than those found in the animal kingdom, yet they can be made to readily supply the deficiency of the animal class.

Too Much Vegetables Even Worse

At the same time it must always be remembered that when resorting to the vegetable group to supply the much needed nucleo-albumins, foods are being introduced into the system that contain an excess of the starch and saccharine compounds. Yet these hydrocarbon forms, because of the ease with which they are digested and absorbed, are very likely to overtax the already defective oxygenating capacity of the system, and thus add, as it were, fuel to the fire, by still further retarding the oxygenation of the proteid element, which even normally is more difficult of reduction.

Further than this, many if not all substances derived from the vegetable kingdom are irritating to the alimentary canal, and easily undergo saccharine fermentation; while,

as has already been pointed out, their contained proteids are very difficult of digestion, as compared with those derived from the animal kingdom.

In fact, the proteid of the vegetables often passes through the alimentary canal untransformed into a peptone, which is the only isomeric form of the proteid molecule, so far as known, to be taken up from the chyme by the little villi lining the intestinal tract.

This being true in the most perfect health, it is naturally so, in even a higher degree, in all diseased conditions. Therefore it is conclusively proved that neither the animal nor the vegetable class of food-stuffs can be regarded as wholly available throughout the course of Bright's, or any other disease process.

So if the best results are to be obtained in the management of this class of cases, as in all other forms of diseases, a well-regulated mixed diet must be established just as soon as it can be digested and assimilated.

A Mixed Diet the Proper One

This well-regulated mixed diet is one that is composed of both the animal and vegetable classes, but one in which the animal class largely predominates.

There is a generally accepted belief that, if meats are used at all in Bright's disease, and other oxidation disorders, they should consist of "white meats." This is a mistake that dates back to the early part of the fourteenth century, when an English surgeon, Arderne, asserted that there was a difference in the food values of the two varieties of meat, as well as in their irritating effects upon the kidneys, and their capacity for producing gout and rheumatism.

"Red Meat" Most Easily Digested

Careful experiment has shown that the proteid of beef — or red meat — is the most easily digested, assimilated, and oxidized of all the proteids, the loss being only two per cent. Eggs rank next, and milk third, and so on down the list of food products until oatmeal is reached.

This is the most indigestible of all food substances eaten by man; for with oatmeal there is a loss of approximately eighty per cent, as compared with the amount ingested.

It should further be remembered that, no matter what the original form of the proteid is — whether fish, flesh or fowl — it must, in every instance, be reduced from the multiple to the simple state, and from this condition

be isomerically transformed into a peptone, which is the only state in which protein can be absorbed by the system.

To the physiological chemist meat is neither red nor white; it is, on the contrary, the same form of isomeric construction, having lost during the process of digestion any identity it may formerly have possessed.

The only questions to be considered are, "What forms of proteid can be most easily transformed into a peptone? and what form can be so transformed with the least expenditure of digestive energy?"

The Sensible Way Is to Use the Most Easily Digested Proteid

This has been definitely settled as in the order here given. In the vegetable class the proteid of wheat ranks first; but it is still considerably behind all of the animal class.

This being true, what reasonable excuse can be offered for using food-products that have, in their construction, a tendency to irritate and overtax an already enfeebled digestion and assimilative system? Why not use instead those that are most readily peptonized and absorbed?

This is, to my mind, the fundamental keynote in the treatment of all disease conditions,

and I have been thus explicit on the subject for the reason that what applies to one disease applies, in a general way, to almost every other disease. **The Key-Note**

Drug medication, as generally used, I feel certain merely complicates the problem, and prevents Nature from doing what she might accomplish herself if not interfered with.

If, however, the exact chemical laws of diet are understood, and if suitable medication is applied, in accordance with these laws, Nature may be greatly aided in her efforts, not only to prevent the development, but to bring about a cure of these disorders. But the treatment should not be directed so much at the kidneys as it should be directed toward removing the causes that enter into the production of these lesions.

When this course of treatment is followed, however, even in conditions that may be considered absolutely incurable by many, Nature will be enabled to remove the causative factors, and fully repair the local damage, so that the result is almost miraculous in its completeness.

The same rules of diet that apply to the treatment of Bright's yield equally good re-

Bright's Disease Only One Form of Under-Oxidation

sults in diabetes. For the cause is very similar, being due, chiefly, to over-feeding and under-oxidation.

It is a fact that most people, from a physiological standpoint, are gormandizers — some to a greater extent than others. Some can stand the strain better and longer than others because their inherent vitality is greater.

Those who reach the degree that is the limit of their capacity for over-feeding, or improper feeding, are especially liable to develop the uric acid, the gouty, or the diabetic condition.

Incomplete oxidation of the proteids frequently results in either the uric acid or the diabetic condition, largely because of an excess of sugars, starches or fats in the diet. Much more oxygen, as we have seen, is utilized to oxidize, or convert the proteid molecule into its end-products. On the other hand, the molecule of starch, sugar or fat requires far less oxygen for its complete reduction and the formation of the end-products, but it is oxidized so rapidly and in such large numbers that there is not enough oxygen available to satisfy a molecule of proteid parentage.

Perhaps a slightly greater restriction in the

use of starches may be required in the initial stages of the treatment of diabetes; but in a general way, what is effective in reducing the under-oxidation in nephritis is equally effective in diabetes, gout, rheumatism, high blood-pressure, arterio-sclerosis, intestinal indigestion, senility, and even in anemia, tuberculosis, and other degenerative disorders.

Give Them Less Starch

In this connection, however, it might be pertinent to emphasize that tubercular patients are quite generally deficient in the amount of hydrochloric acid secreted by their gastric glands, and that almost invariably these patients fail to produce sufficient acid properly to convert the albumins in the food into syntonin, so that they may then be acted upon by the pepsin, and carried forward into peptones.

Tubercular Patients Need Hydrochloric Acid

Therefore, these subjects should always be given a small quantity — from ten to fifteen drops — of dilute hydrochloric acid, a half hour after each meal, to aid digestion and the enfeebled digestive system. This alone will often promote a better appetite, and greatly aid in the process of forcing nutrition.

However, the use of cod liver oil, now happily dying out, is one of the most pernicious

But They Don't Need Cod Liver Oil

outrages that have ever been perpetrated against the tubercular. Those who have recommended it have claimed that the fish-liver oil contains much nutritive substance useful in tissue-building; when, as a matter of fact, cod liver oil is in no sense a tissue builder. It is merely a heat-producer.

As the patient can get all the heat-producing food he requires in a much more available and more easily digestible form, it is obvious that the use of this preparation should be thoroughly discouraged. For cod liver oil, nauseating and indigestible as it is, tends to destroy what little appetite and digestive functions there yet remain to those patients; so like creosote, it actually does much more harm than good.

The Cause of "Acid Stomach"

The uric acid condition, however, is not the only acid condition that conspires to make life miserable for unfortunate human beings who sin against dietetic laws. There is also lactic acid fermentation, which frequently stands as an antecedent to uric acid formation by interfering with normal digestive processes.

This is a very common condition, and manifests itself because of the lactic acid ferment

of the stomach attacking the starches and sugars, developing fermentation and the production of lactic acid. This fermentation process can occur only when there is a decreased flow, or else an absence of the normal acid and peptic qualities of the gastric juice.

This formation of lactic acid is a common cause of acid dyspepsia, although in by far the largest number of cases there is either an excessive secretion or an excessive acidity of the gastric juice which is the true cause of acid dyspepsia.

How to Know Which Kind of Dyspepsia You Have

In acid dyspepsia which has resulted from lactic acid fermentation — from the fermentation of sugars and starches — the eructation of acid fluid or gas does not come on immediately after taking the food, but is developed some time later, and is always intensified by taking sugary food, which, of course, includes starches.

When due to hyper-secretion of the normal stomach acid, however, the symptoms come on immediately, and in the absence of saccharine foods.

Acid dyspepsia can best be overcome by limiting, or entirely omitting for a time, all

How to Prevent Fermentation

starches and sugars, coming back to them gradually, as the stomach and its secreting functions become once more normal. The chief diet should consist of milk, eggs, meat, and green vegetables.

Sometimes the chewing of gum is valuable in this condition. For gum-chewing tends to increase the amount of alkaline saliva taken into the stomach. This helps to neutralize the acid present, as well as, by its ferment, ptyalin, assist in the digestion of the starch, and to stimulate, by its alkalinity, the gastric secretion.

Gum-Chewing Sometimes Helps Digestion

In hyper-acidity, due to an excessive amount of hydrochloric acid, brought about by an excessive oxidation of proteid in the gastric cells, the best remedy is a little hair of the dog that bit you — ten or fifteen drops of dilute hydrochloric acid before each meal. This has a tendency to overcome the excessive secretion of hydrochloric acid, and the extra acidity which accompanies it.

Above all things, however, try to cultivate a cheerful frame of mind, especially at meal-time, or during the time a meal is being digested. Anything and

Don't Worry

everything that may help the mental attitude — even to the tasteful arrangement of the table, and the spotlessness of the table-linen, and your particular feelings concerning those with whom you may be sharing your meal — are to be commended.

For a sour disposition creates a sour stomach. A sour stomach spoils good food. And this, together with picking the wrong kinds of food, spoils a lot of good people.

So select your food carefully, and eat it cheerfully. That's all there is to Eating to Live Long.

COMPARATIVE TABLE OF FOODSTUFFS.

Kind of Food.	Water H_2O.	Proteids, or CHNOS.	Starch, Sugar and Cellulose or CHO.	Fat or CHO.	Mineral Salts.
Human Milk	88.28	3.41	4.62	3.48	0.21
Cow's Milk	86.23	3.73	4.93	4.50	0.60
New Milk	86.00	4.10	5.20	3.90	0.80
Skimmed Milk	88.00	4.00	5.04	1.80	0.80
Buttermilk	88.00	4.10	6.40	0.70	0.80
Kumyss	91.62	1.12	2.20	1.20	0.02
Kefyr	91.93	3.80	2.00	2.00	0.27
Kumyss (Brush)	90.99	2.04	3.26	1.91	0.44
Matzoon (Dadirrian)	87.69	3.98	2.03	4.91	0.78
Cream	66.00	2.70	2.80	26.70	1.80
Cheese	41.84	29.23		23.84	5.09
Cheddar Cheese	36.00	28.40		31.10	4.50
Skim Cheese	44.00	44.80		6.30	4.90
Eggs	69.05	15.58		13.96	1.41
Entire Egg	74.00	14.00		10.50	1.50
White of Egg	78.00	20.40			1.60
Yolk of Egg	52.00	16.00		30.70	1.30
Lean Beef	72.00	19.30		3.60	5.10
Fat Beef	51.00	14.80		29.80	4.40
Lean Mutton	72.00	18.30		4.90	4.80
Fat Mutton	53.00	12.40		31.10	3.50
Veal	63.00	16.50		15.80	4.70
Fat Pork	39.00	9.80		48.90	2.30
Green Bacon	24.00	7.10		66.80	2.10
Dried Bacon	15.00	8.80		73.30	2.99
Ox Liver	74.00	18.90		4.10	3.00
Tripe	68.00	13.20		16.40	2.40
Cooked Meat, roast, no dripping being lost (Boiled assumed to be same)	54.00	27.60		15.45	2.95
Poultry	74.00	8.80		3.80	1.20
Whitefish	78.00	18.10		2.90	1.90
Eels	75.00	9.90		13.80	1.30
Salmon	77.00	16.10		5.50	1.40
Average Meat	65.56	17.51		13.16	3.77
Fat Meat	54.22	15.99		28.22	1.57
Lean Meat	74.44	19.77		2.56	3.23
Average of Fish	75.57	16.98		6.20	1.25
Beef Tea	95.79	3.28		0.25	0.67
Butter	11.70	0.50	0.50	87.00	0.30

COMPARATIVE TABLE OF FOODSTUFFS.

Kind of Food.	Water H_2O.	Proteids, or CHNOS.	Starch, Sugar and Cellulose or CHO.	Fat or CHO.	Mineral Salts.
Bread	36.00	7.50	53.85	1.15	1.50
Wheat Flour	12.46	14.66	67.62	1.93	3.33
Rye	13.97	14.27	66.91	2.25	2.60
Rye Meal	15.00	8.00	73.20	2.00	1.80
Barley	13.80	12.96	67.18	2.76	3.10
Barley Meal	15.00	6.30	74.20	2.40	2.00
Oatmeal	12.05	12.15	67.00	6.55	2.25
Corn	14.80	12.50	62.65	8.80	1.25
Indian Corn Meal	14.00	11.10	65.10	8.10	1.70
Millet	13.14	12.35	68.35	3.60	2.30
Rice	15.14	7.47	75.69	0.80	0.90
Potatoes	74.50	2.25	21.92	0.15	1.18
Lentils	12.51	24.81	58.36	1.85	2.47
Beans	11.75	24.31	58.03	2.54	3.37
Peas	14.03	23.00	57.80	1.86	2.41
Carrots	83.00	1.30	10.40	0.20	1.00
Parsnips	82.00	1.10	15.10	0.50	1.00
Turnips	91.00	1.20	7.20	0.00	0.60
Cabbage	91.00	2.00	5.80	0.50	0.70
Green Vegetables	88.00	2.50	3.25	1.75	4.50
Alcohol	0.75		99.25		
Sugar	5.00		95.00		
Treacle	23.00		77.00		
Arrowroot	18.00		82.00		
Beer and Porter	91.00	0.10	8.70		0.20

MENUS SUGGESTED FOR TWENTY-ONE MEALS

BASED UPON DR. WILLIAM H. PORTER'S IDEAL DIET IN "EATING TO LIVE LONG"

MONDAY BREAKFAST

Two soft boiled Eggs (three minutes)
One glass of Milk
Two slices of one-day-old Bread (¾ inch thick) with
½ oz. of Butter
One cup Coffee, preferably taken clear.

MONDAY LUNCH

Fried Smelts
Two slices of whole wheat Bread, with Butter
Lettuce Salad
One glass Milk
One cup Coffee

MONDAY DINNER

Clam Broth
Bread and Butter
Roast Mutton
String Beans or boiled Rice, or a small Baked Potato
One glass Milk
Rice Pudding or Sherbet
Cracker and small piece of Cream Cheese
Demi-tasse of black Coffee

TUESDAY BREAKFAST

Two fried Eggs with or without Bacon
Two slices of dry Toast, buttered
One glass Milk
One cup Coffee

TUESDAY LUNCH

Broiled Mutton or Lamb Chop
Endive Salad
Two well-baked Rolls with Butter
One glass of Milk, or cup of Junket
One cup Coffee

TUESDAY DINNER

Cherrystone Clams, or Oyster Cocktail
Dinner Rolls with Butter
Roast Chicken, or Roast Veal
Peas, Macaroni, or a small Baked Potato
Romayne Salad
Toasted Cracker and Cammenbert Cheese
Lemon Jelly
One glass Milk
Demi-tasse of black Coffee

WEDNESDAY BREAKFAST

One Shredded Wheat Biscuit and Cream
One Muffin, buttered
Liver and Bacon
One glass Milk
One cup Coffee

WEDNESDAY LUNCH

Broiled Ham, or chopped Round Steak
Spinach
Two slices whole wheat Bread, with Butter
One glass Milk
One cup Coffee

WEDNESDAY DINNER

Chicken Broth with rice, or Giblet Soup with Barley
Rolls, or whole wheat Bread, with Butter
Roast Beef (rare or medium well done)
Lima Beans, or Carrots, and a small Baked Potato
Lettuce Salad
One glass Milk
Cheese and a small piece of rye Bread
Tapioca Pudding
One cup Coffee

THURSDAY BREAKFAST

Krumbles and Cream
Plain Omelette
One slice dry Toast, buttered
One glass Milk
One cup Coffee

THURSDAY LUNCH

Broiled Chicken
String Bean Salad
Glass Milk
Graham Gems and Butter
One cup Coffee

THURSDAY DINNER

Rolls or graham Bread and Butter
Fried Flounder or Perch
Corned Beef and Cabbage or boiled Mutton
Pickled Beets, Macaroni, or a small baked Potato
Bread Pudding
One glass Milk
Toasted Cracker and a bit of Roquefort Cheese
One cup Coffee

FRIDAY BREAKFAST

Two shirred or scrambled Eggs
Two corn Muffins or graham Gems
One glass Milk
One cup Coffee

FRIDAY LUNCH

Broiled Scrod, or Shad Roe and Bacon, or a
small Tenderloin
Bread and Butter
One glass Milk
One cup Coffee

FRIDAY DINNER

Mock Turtle or Oxtail Soup
Baked Blue Fish, or fricasseed Chicken
Dinner Rolls or Johnny Cake
Cold slaw Salad
Boiled Rice or a small Baked Potato
One glass Milk
Custard Pudding
One cup Coffee

SATURDAY BREAKFAST

Wheatsworth Biscuit and Milk
Two dropped or poached Eggs on Toast, with or without fried Bacon
One glass Milk
One cup Coffee

SATURDAY LUNCH

Brook Trout, or Lobster or Crab Salad
Rolls and Butter
One boiled Onion
One glass Milk
One cup Coffee

SATURDAY DINNER

Beef Broth, or Chicken Jelly
Beef a la mode, or boiled Ham
Rolls or whole wheat Bread and Butter
Baked Sweet Potato
Asparagus tips Salad
One glass Milk
Coffee Jelly or a Lemon Ice
One cup Coffee

SUNDAY BREAKFAST

One Shredded Wheat Biscuit and Cream
Broiled Ham and two Eggs
Corn or graham Muffins
One glass Milk
One cup Coffee

SUNDAY DINNER

Oysters, or Clams
Roast Turkey or Porterhouse Steak
Bread and Butter
Squash or green Peas and a small baked Potato
Lettuce and Tomato Salad
Ice Cream and Macaroons
Cracker and Swiss Cheese
Demi-tasse of Coffee

SUNDAY SUPPER

Oyster Soup or Mutton Broth with Barley
Cold Turkey, Ham or Beef
Rolls and Butter
One glass Milk
One cup Coffee

NOTE ON MENUS

Dr. Porter's ideal diet was originally intended to make sick people well, and to keep well people from getting sick. Experience in thousands of cases shows that it has done and will do both.

It is an evidence of sound common sense, however, to appreciate that only a normal, robust individual can "take care" of any number of things which would be absolutely taboo with a person who is always conscious of the fact that he has a digestive apparatus—or who has something wrong with his physical economy—even though he doesn't know what it is.

It must be emphasized that the menus here suggested are not to be taken literally, and in the amounts specified, as one would take a prescription, for it is not possible to actually prescribe for patients whom one has never seen, and whose personal idiosyncracies are an unknown equation.

Sometimes "what is one man's meat is another man's poison." There are many, for instance, to whom eggs, cheese, shell-fish, and various other articles of diet, are anathema. If long and painful experience has demonstrated to one's satisfaction that certain foods "explode" in the interior, the only wise thing to do is to keep those foods from that interior.

But there are a few broad principles which may well be classed as quite universal in their application. For instance, it is evident that potatoes used so generally may be allowed to normal individuals, provided they are taken in moderation and not in combination with a hat full of other starchy foods, the oxydation of which entails too great a strain upon the oxygenating capacity of the body, leaving the protein under-oxydized and a distinct menace to the physical welfare of the individual.

It must always be remembered, especially by those subject to rheumatism, gout, lumbago, high blood pressure, and "old age" conditions, that the excessive use of potatoes and starchy foods in general is one of the most prominent of all causes for uric acid over-production with all the manifold disturbances that this over-production creates.

It is also an evidence of sound judgment for those to

whom milk may be distasteful, or who do not tolerate milk well, to replace this item with a junket, or else with buttermilk, or some of the fermented milks—as Koumyss, Zoolac, or artificially soured milk. If, however, there is a proved idiocyncracy against the use of milk, the only sensible thing to do is to omit it entirely from the dietary.

Cereals are used and relished as a breakfast aid by many. Those who have carefully read "Eating to Live Long" will recall that most of these cereals—including that rock-ribbed institution, oat-meal—are generally unfit for human consumption, and most of all, for invalid consumption.

There are other cereals, however, which have not been criminally maltreated, robbed of their mineral salts, or denuded of all those qualities which make them worthy to be classified as food for human consumption.

Of these, perhaps the best are old-fashioned hominy, shredded wheat, krumbles, and wheatsworth biscuits. Any one of these may be used as a cereal, provided it is eaten without sugar.

Citrus fruit—grape fruit or oranges—or pears or other non-acid fruit—may occasionally be taken in conjunction with the breakfast, although these are of more physiological value when taken either between meals or as a fruit breakfast. Nevertheless, the excessive or the indiscriminate use of fruit is to be condemned, because of the fermentation usually excited by fruit, and because of the fact that fruit is so likely to be eaten either in an unripe or in an over-ripe state. Each of these conditions is notoriously worse than the other.

In New York City and in various of the urban centers of population, it is the custom to take the principal meal at night, after the strain and stress of the day. This leaves more dynamic and digestive energy for the conversion of food.

If, however, one is accustomed to eat the principal meal at mid-day, it will merely be necessary to call "lunch" "dinner," and "dinner" "lunch"—and act accordingly. Then everybody will be happy.

APPENDIX

NOTES AMPLIFYING CHAPTER II

NATURE'S DRUG SHOP.

Few, even among the medical profession, fully realize that within the animal economy there is maintained a Drug Shop. It runs by day and by night, furnishing for us every day a well regulated dose of physic, which is produced as follows:

One of the three active ferments of the pancreatic secretion—namely, steapsin—attacks the animal and vegetable fats, especially the latter, and separates them into their fundamental radicals—the fatty acids and glycerine.

The higher value of the vegetable oils, as compared with those of animal origin, is due to the fact that they are more easily transformed into fatty radicals. As these acid radicals are considered essential to emulsify and fluidify all oils, here lies their economic value as dietetic agents.

The fatty acids attack also the carbonate of soda and convert it into a bicarbonate, and, by the further action of the ferment body, cause a union of the fatty acid and the free soda, forming a hard soap.

Thus it is found that in the alimentary canal by virtue of the presence of the sodium bicarbonate, the fats, and the ferment body, steapsin—a product of the pancreatic gland—the animal economy is constantly manufacturing both glycerine and soap.

In this portion of the alimentary canal, the glycerine acts very much as it does when injected into the rectum. By its hygroscopic property it tends to attract water to itself from the more solid bodies, and so to fluidify more perfectly the contents of the gut. The soap acts as a lubricating agent, and by the combined action of the glycerine, the soap and the bile which is poured into the alimentary tract at this point, an easy passage of the intestinal contents is made possible.

Added to the foregoing chemical mutations, must be included the fact that in the reduction of the proteid

material in the gastric cells sulphuric acid is produced. This acid, as soon as it is formed, attacks the chloride of sodium, which results in the formation of hydrochloric acid and sodium sulphate. [1]This salt, commonly known as Glauber's salts, acts, as do all the saline cathartics, by its powers to arrest absorption by the intestine and to draw water in considerable quantity from the blood contained in the blood vessels in the intestinal wall. The rapid withdrawal of water from the blood vessels is what causes the large watery stools after taking a saline.

With these facts before us, it is quite clear that Nature runs a little drug shop, as it were, high up in the alimentary canal, producing for us each and every day a dose of physic which is poured into the intestinal canal at its very beginning, its composition being Glauber's salts, glycerine, soap, and the bile acids and salts. The salts and glycerine keep the contents of the intestinal canal properly liquefied; the soap perfectly lubricates the canal, while the bile acids and salts augment peristaltic activity. When Nature's druggist properly attends to business, constipation is an unknown condition; if he fails to do his work properly, constipation inevitably develops.

Observing this physiological phenomenon closely, we see at once that nature is compelled to produce daily a laxative compound for the perfect movement of the intestinal canal and its contents. Otherwise, there is a tendency toward a too quick solidification of the intestinal contents, a sluggish action of the muscular layer, and the development of constipation. It further indicates that in the treatment of costiveness the chief aim of the therapeutist is to reestablish this natural manufacture of glycerine and soap and to augment the activity of the hepatic and pancreatic secretions, and not to resort to abnormal and artificial methods, such as the continued use of rectal enemata, and the more powerful and absolutely artificial cathartic agents. The use of mineral oils is not based on scientific chemico-physiology, but is as far from it as it is possible to get.

By a proper regulation of the diet and the administration of a reliable preparation of inspissated ox bile, together with a good preparation of pancreatic extract and the requisite amount of sodium carbonate and sulphate, the digestive powers will be augmented and glandular activity made more nearly perfect. By this method the normal production of these physiological laxative agents will be reestablished, a better digestion and assimilation will follow, and the action of the intestinal canal will be augmented.

---

[1]Porter: *Medical Record*, September 18, 1920; page 471. *New York Medical Journal*, June 12, 1920; page 1019.

In beginning this line of treatment it may be necessary to add to the more natural compounds some of the more powerful, and, strictly speaking, artificial substances in the form of laxative or even cathartic agents. As the normal physiological standard is approached, however, these artificial and strictly cathartic remedies must be diminished or suspended. This is especially true of all saline cathartics, which are so often used day after day to the detriment of the individual.

S0-FDJ-520